The Million Egg Farm

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The Million Egg Farm

Rancocas Poultry Farm

Written by Its Founder
JOEL M. FOSTER

BROWN'S MILLS-IN-THE-PINES, N. J.

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JOEL M. FOSTER

AUTHOR'S NOTE

IN THE following pages I give you the record of an actual experience; there is not a guess, a dream, or a touch of fiction from the first sentence to the last—it is fact, plain unvarnished fact.

If asked why I have written the book I may give several answers.

First: When a man has achieved a marked success contrary to general expectation he has a pardonable pride in wishing the public to know the facts.

Second: When he is convinced that multitudes of men now subsisting precariously on low wages may repeat his success on similar or smaller proportions it is not a very high order of benevolence that leads him to point out the way.

Third: As he realizes that the instinct leading thousands of people "back to the land" and to the resources of nature is liable to grave mistakes and bitter disappointments, particularly when much of the guidance offered is based upon untested theories and guesses, he feels that he is only acting in the interests of common humanity in furnishing the absolutely reliable information which his own experience has supplied.

Fourth: Political economy teaches that the well-being of the nation rests primarily upon the products of the soil and that unless all forms of farming are placed upon a scientific basis we are surely courting a widespread and terrible disaster. This I also believe; and having demonstrated that poultry farming by scientific and business-like methods may be made profitable to the investor as well as a contribution to

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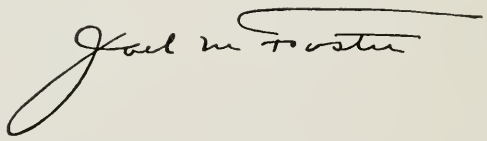
the common good, I hold it to be my duty to tell honestly and clearly all I know on the subject.

It is therefore my sincere hope that the story of the Rancocas Poultry Farm may furnish courage and guidance to the many who are seeking light on the subject treated. Perhaps it may be well to say that the recent development of my personal venture into an incorporated company does not in any way affect the facts recorded in the book. The amazing success of my individual experiment suggested the step. Any man, by natural progression, can go as far and much further than I have gone without drawing upon any other resources than his own and the annual increment of his stock and equipment. Having withheld no principle or essential detail in telling my story, I am confident that any one with intelligence, perseverance, care, and capacity for work can realize the measure of success for which he plans.

Yours sincerely,



FOREWORD

THE success of the Rancocas Poultry Farm is attracting national attention. A farm that produces 1,000,000 eggs a year from an investment of $100,000 and earns 19 per cent. profit is worthy of consideration.

There is nothing of mystery or miracle about it. In the first place there was the simple idea, common to almost every man, woman, and child in the United States, that "There's money in chickens." It is, in the last resort, the knowledge, the common sense, the concentration, the gray matter in the skull, the energy—in short, the personality of the man behind the hen, that makes her a mint, turning grain and water into eggs, and eggs into profit.

"There's Money in Chickens"

It is not inspiration, but perspiration, that counts. No one can hope to succeed in the chicken business without work.

It is obvious that the success of a poultry farm, be it large or small, should carry valuable knowledge to those who are wise enough to profit by the lessons of its experiments and experiences. The man who feels the hen fever in his veins is in a good way to acquire the science and art of poultry production. And if he is willing to study the experiences of others he can succeed quickly. The successful chicken farmer is an enthusiast; he imparts his spirit to others and infects his coworkers with a healthy form of chicken pox. It is easy to learn from him, to work with,

Lessons of Use to Young and Old

him, and to turn his hopes and plans into realities—dividend-paying actualities.

This description of the MILLION EGG FARM will be, therefore, of dollars and cents value to the man already in the business as well as to the beginner; giving the one a knowledge of scientific principles and the other a help to discriminate between wise and foolish methods.

Misleading Information

Many poultry and egg farms have been described in print during the last decade, but, unfortunately, the statements and claims relative to methods and profits published in these books are usually unsubstantiated and often misleading to all except the most critical or experienced poultry men. The valuable knowledge so eagerly sought for by the thousands interested in profitable poultry culture is also lacking in these books.

Experience is Wisdom

It is the object of the MILLION EGG FARM book to give unadorned, verified, and complete facts about the Rancocas Poultry Farm. No attempt is made to tell of practices other than those tested upon this Farm. It describes as briefly as possible what the Rancocas Poultry Farm has done, what it is doing—and why and how. There are no secrets withheld and no mere theories advanced—just the plain, profitable processes evolved from years of study and experiment in the poultry business.

Consumers are Competitors

The products of a poultry farm are in so great demand that there can be among producers no competition worthy of the term. The competition is that of the consumers; namely, to get the best chickens and eggs. If conditions were likely to be reversed, the International Poultry Sales Company would be short sighted in publishing this book.

Several volumes of this size could be filled with description and pictures relating to the plant and to general egg farming, without exhausting the subject. The Rancocas Poultry Farm is still in the days of its youth and the record of its origin and

successful growth is a prophecy of its future. The 20,000 layers on the Farm will be increased to 30,000, and there is no reason why this system could not be extended indefinitely.

The Rancocas Unit

Without reservation I tell herein how I made my first attempt to deal with poultry and lost money; how and why I chose the present location, and general egg farming for my specialty; and why the single-comb white Leghorn breed of fowls is used, together with the methods of selection and mating.

Details of the now famous "Rancocas Unit" laying houses and the care of feeding the laying hens are given elaborately. The simplicity and success of these operations are the admiration of the poultry world. This is the vital department of the plant, for from it comes the eggs. If it is operated wisely, eggs are produced at a cost below market prices and at a time when prices are highest. For the highest profit there must be rapid maturity of pullets, quick and early molting of hens, and high-pressure feeding for eggs. The hen that lays all her eggs in 3 years gives $5 more profit than the hen that takes 5 years to do her life's work.

The Balanced Ration

There is no single grain that contains all the necessary food elements in the right proportion, so the hen must be given a balanced ration. The Israelites rebelled when required to make bricks without straw, and the hen refuses to lay eggs without the proper nourishment. Any one can get eggs in warm weather, just as any one can get ice in freezing weather. To reverse the process, doing something every one does not do, brings the largest and surest profit.

The incubator basement, the largest in the world, and the brooder systems are described and illustrated alike in their arrangement and operation. These two departments of the Farm are scarcely less vital to its welfare than the laying department just mentioned, for they renew and improve the stock-in-trade of the Farm.

Poor conditions and careless operations would bring disaster with lightning-like speed.

Advice to Beginners

The advice to beginners able to invest limited sums of money in the chicken business, was worked out carefully and particularly for this volume. It is based on the experience and growth of the Rancocas Farm, and not upon theories.

CHAPTER I

Early Experiences of Joel M. Foster, Founder and President

IT IS fitting to include in the descriptive history of any business an outline of the experiences undergone by the man responsible for its development. Knowledge born of experience, together with aptness, constitute the chief equipment of "The man behind the hen" on the Rancocas Poultry Farm. Ability for large undertakings, combined with the "chicken instinct," make possible a poultry farm as successful as the Rancocas.

My Start

Starting in the poultry business, at Mt. Royal, N. J., I rented for $300 a year a chicken farm that had been abandoned as a failure. This was in March, 1904.

I was not actuated by the idea of improving my health (the commonly ascribed motive), but solely by a desire to earn a good living in the line of employment most congenial to me. From the view-point of health, however, it may be here stated that poultry raising is one of the most beneficial forms of employment. Nothing is more healthful and exhilarating than outdoor life, moderate exercise, and enthusiasm in a given work. Poultry farming affords these in abundance to its successful followers.

The beginning at Mt. Royal was made with 100 adult chickens. The farm was equipped with a brooder house

100 feet long, and two laying houses divided into pens, each 75 feet in length. To grow and profitably market broilers and capons was the prime object of this undertaking. A promising market was quite accessible to the farm.

One Hundred Chickens at Mt. Royal

At the end of the first season 4,000 birds had been marketed at a money loss of $680. But against this must be credited the household and personal expenses of my family and myself. No money was paid in wages, for no help was hired, as I was away from the farm only a few hours during the entire year.

Although a little daunted by the meagre profits, I did not abandon the effort to raise broilers and capons. By January the twenty-sixth, of the next year, I had 1,400 birds in the brooder house when the structure and its contents went up in flames. Three weeks later a new brooder house was completed and by the first of March was stocked with chickens. Taking a new grip upon the situation, I determined to force the season to a profitable conclusion; but Fate again interfered.

All up in Smoke

I awoke one morning to discover that more than 700 of the birds were dead. The cause was "rats," the farm being near the wharf, an infested manure-disposal place. The remaining chicks were carried into the dwelling house and placed in the kitchen, the sitting room, and even the parlor, there to remain until a cement floor could be laid in the brooder house. As may be surmised, the second season closed with a heavy financial loss.

Getting Wise

Again the situation was scrutinized, this time in the light of two years of sad experience. The result of taking thought was a resolution to abandon the poultry business unless it afforded something more profitable than raising broilers. I therefore packed my grip and spent several weeks among the most

successful chicken farms in the eastern United States, studying the experiences of others and the general possibilities of the business.

The one outstanding, unmistakable fact which I learned was that the profitable poultry plants were concentrating upon the egg-producing branch of poultry farming. I returned home determined to make that my specialty.

I had then to face the problems of how to start anew, what breed of fowls to cultivate, and where to locate. The following pages tell how these difficulties have been overcome and a tremendous success achieved.

The Rancocas Strain

The Egg Machine (Note the Rooster Flirting)

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CHAPTER II

Single-Comb White Leghorns and the Rancocas Strain

BROWN'S MILLS In-the-Pines, N. J., was selected as the most desirable site for my second experiment, because of its accessibility to the large food markets and because of its soil and climatic advantages. It is located on the Amboy Division of the Pennsylvania Railroad, one hour from Philadelphia, and three hours from New York, in which two cities the highest prices are paid for fresh eggs.

Picking a Site

The farm occupies valuable land touching on either side upon much-traveled roads, and is but ten minutes walk from the railroad station.

The tract first purchased embraced about 140 acres; 110 acres of adjoining land have since been bought, and a temporary lease made for an additional 35 acres and several buildings nearby.

It may be said at this point, in anticipation of a lengthier description to follow, that there are thirty-six laying houses on the farm, containing 20,000 single-comb white Leghorn chickens.

If these houses were placed end to end they would make a building nearly two-thirds of a mile long.

The Rancocas Strain in the Pines

The incubator basement under the executive building is furnished with 250 machines that have a combined capacity of over 100,000 eggs every 21 days. This is the largest incubator capacity in the world.

The World's Largest Incubator Capacity

The hot-water-heated brooder house is 360 feet in length and mothers at one time 20,000 chicks. Beside this brooder house there is still another and larger brooding system which cares for 30,000 additional chicks.

It requires three miles of underground piping to carry water to the flocks of chickens and there are 60,000 square feet of concrete flooring in the laying houses alone. The runs, or yards, are enclosed with wire netting to the extent of six miles. Hundreds of tons of feed and thousands of egg crates are used annually. The output more than justifies such an elaborate equipment. 500,000 market eggs, 59,380 day-old chicks, 92,210 hatching eggs, 5,000 broilers, besides pullets, cockerels, fancy stock, etc. were sold during the season of 1909 from 7,000 layers. Every separate product is guaranteed to be of the highest quality.

The Output of 1909

Beside the land and buildings occupied by poultry there are sixty acres of ground under cultivation, upon which is grown such necessary green food as clover, mangel-wurzels, and rutabagas.

We now come to a main feature of the farm's equipment. It is stocked EXCLUSIVELY with single-comb white Leghorn chickens. To this fact alone is due much of the farm's success, as the white Leghorn is the best laying hen yet developed. If any other breed of fowl were more profitable for egg producing it would immediately replace the Leghorn. It is not sentimental preference, but the net yield of money per hen that counts.

The Single-Comb White Leghorn

To keep two breeds of fowls for eggs, supposing there was another breed almost as good in every way, would necessitate

Looking Them Over

two standards of management, entail greater expense in operation, and cause confusion in the quality of eggs produced.

The Leghorn fowl is classed as Mediterranean in opposition to the Asiatic and American varieties. It is one of the first breeds of which we have any knowledge and is supposed to have originated in Italy. Besides the single-comb white Leghorn fowl, there are black, brown, and buff Leghorns, smaller in size. But the white Leghorn has proved in many contests that it is naturally superior to all other breeds in producing eggs profitably. Eighty per cent. of the large commercial poultry farms in the United States are stocked with single-comb white Leghorn hens.

A Peerless Egg Layer

This fowl easily adapts itself to changes of climate and surroundings, prospering alike in confinement or on free range. The quantity of food required to keep three Leghorn fowls would only be enough for two of the Asiatic or American breeds, for the cost of feeding is in proportion to the weight. Not only is the white Leghorn of the most prolific egg type, but it is beautiful in appearance. It has a rather long head; prominent and jewel-like eyes; a strong, golden-yellow beak, nicely curved; and large, brilliant red wattles and comb. Its back is long and graceful. The tail is carried at an angle of thirty degrees. The body is prominent at the breast and wide between the thighs, providing ample room for the digestive and egg organs. In demeanor it is alert and buoyant; in movements, light and swift. It is quick to mature, produces white-shelled eggs, and is a non-setter. From an artistic point of view, the snow-white plumage and red combs of a flock of these chickens in the dappled sunshine of the pines make a superb scene. The beauty, symmetry, and shapeliness of the birds as individuals and in the mass, charm and delight the beholder. All these qualities are evidence that the Rancocas Leghorn is healthful, sturdy, and prolific—an animal machine built to lay eggs.

Its Physical Beauty

The First Cull of Five Hundred Cockerels

By the practical poultry man there is nothing more eagerly sought than a continuous egg-laying strain. Production through three or four years gives fair proof that a certain hen has vitality, needing only reasonable care to be kept in good health.

The Rancocas strain of Leghorns comes from cultivating intensely, through many generations, the inherent tendencies of the breed. There is a great difference between families of the same breed. In crossing this strain I started by placing an order for 20,000 hatching eggs with one of the largest white Leghorn farms in the eastern United States. But of the first 2,000 eggs delivered on this order, 1,200 proved to be infertile. Further delivery from this farm was stopped, investigation revealing that the eggs were from trap-nested hens. The use of trap nests would not necessarily have been harmful if proper care had been exercised; but in this case one man had tried to operate the nests for 4,000 hens, with the consequence that the hens were not released from the nests from the time of the first egg collection in the morning until the second egg collection at night. This prevented the hens from associating with the males. This farm subsequently failed.

First Experiments

Another large farm then received an order for white Leghorn eggs. Of the 10,000 incubated only forty-five per cent. hatched. The incubators had been previously operated with much better success, so I concluded that the eggs were again at fault. Close observation showed their life germs to be weak; and further inquiry led to the discovery that they were laid by pullets—not the class of eggs a trustworthy farm should sell for hatching.

In order to obtain sufficient birds that year to make the Rancocas Poultry Farm the size desired, a further search was made for hatching eggs. Eventually I secured several thousand from two large poultry plants, these third and fourth lots hatching over sixty per cent. of live and healthy chicks.

The Quest for Hatching Eggs

The Last Cull of the Cockerels

The Rancocas Poultry Farm started then with flocks of single-comb white Leghorn fowls made up from these four distinct strains.

By observation, analysis, and experiment the qualities which needed strengthening in these flocks were discovered and developed. Superior adult Leghorn males from other strains were introduced, to breed size and strength where needed. Chickens are among the most plastic forms of animal life and can be easily influenced in their physical appearance and organic capacities.

The photographs in this chapter picture, more vividly than words, the general appearance of the Rancocas strain of single-comb white Leghorn cocks and pullets. A brassy bird is segregated at once and shipped to market as soon as practicable. Many cocks are brought to such perfection on the Rancocas Poultry Farm that they are eagerly sought by breeders of fancy and utility stock. It is the male bird that usually transmits color, and most strongly influences the shape of its progeny. This fact is used to the fullest extent, but is never carried to such lengths that it lowers the general vitality of the stock.

The Aristocrat of the Poultry Kingdom

As a fair example of how carefully the individuals of the flocks are selected, last year's practice is here described. From 4,000 cockerels brought to broiler size, 1,500 were kept as being the most desirable in weight and appearance. A little later a second selection reduced the 1,500 to 1,000. This flock was held under close scrutiny until the individuals weighed two and a half pounds when a final rigid selection brought it down to 500 birds—only one out of eight surviving the tests. Scientific and practical considerations governed these selections so that the 500 represented the acme of animal beauty and vigor—almost perfection in shape, color, and comb. Besides selecting in this manner from my own flocks, it is no secret that I buy a few male birds each year, regardless

Artificial Selection

of price. One-sixth of the cockerels kept on the farm are birds that have been hatched and raised from Rancocas eggs on other farms.

This is a precautionary means of insuring the best possible breeding stock, as it is thought that change of climate and environment may be beneficial to the cockerels. These foreign males are mated with Rancocas hens in order to introduce new blood and prevent any chance of inbreeding.

All the female birds associated with foreign males this year will be killed and marketed. All pullets from eggs hatched from these matings will also be marketed, only the male birds being kept. In this way inbreeding is made impossible. And only eggs from yearling or two-year-old hens are used or sold for hatching.

Prevention of Inbreeding

The present Rancocas strain of single-comb white Leghorns has been developed by the practical application of Darwin's theories of selection and the survival of the fittest. The work of selection and culling goes on year after year, for eternal vigilance is the price of high quality. Even beyond the tests for beauty and vigor I segregate all pullets and eliminate all those not up to the Rancocas egg-laying standard.

CHAPTER III

Why General Egg Farming is the Most Profitable Department of Poultry Farming

THE Rancocas Poultry Farm devotes its efforts chiefly to general egg farming, rather than to producing poultry meat. There are several reasons for this specialization, the chief one being that it has proved the most profitable department of poultry farming.

Four Sources of Profit

In the first place, there are four sources of profit: marketing eggs all the year; selected hatching eggs that bring still higher prices; the baby chicks; and an unusual occurrence of fancy fowls.

The value of eggs each year in the United States is many millions of dollars greater than the value of poultry meat. About a billion eggs are consumed in New York City annually; but so few of them are of premium quality that those people who will have fresh eggs must pay a premium of from 5 to 20 cents more per dozen. To take advantage of this great opportunity is the business of the Rancocas Poultry Farm.

Eggs Always in Demand

Competition for the premium egg trade is a negligible matter for the average farmer, although he is the man producing the great bulk of market eggs. He does not take the trouble to raise proper fowls and give them the special care and feeding

One Thousand Rancocas Broilers

necessary to make them produce a premium quality of eggs. The demand for eggs is far ahead of the supply. There is no chance of a low-price era.

The man raising broilers or roasters gets no profit other than the meat profit. The Rancocas Poultry Farm gets a share of the meat profit finally, but first it sells 400 to 500 eggs from each hen. Keeping hens after they have reached the pullet size requires only the comparatively small extra investment for laying houses; and each hen will pay a profit of $2.78 a year, over the cost of feeding This is many times more than could be made from chickens at the broiler age. In growing chickens for capons, the cockerels usually are about half of the hatch and a profit of $1.00 on each would be good.

The Broiler Risk

Almost all risk in the poultry business comes before the chicken reaches the broiler age. The broiler plant has its losses concentrated within the few weeks of a broiler's life, with the result that these losses amount to a greater percentage of the gross income from the bird than they would if it was allowed to live three or four years. There is no income from eggs.

In farming for eggs the hatching can be done in the breeding season, when conditions are most favorable. The grower of poultry meat has to hatch eggs and care for young stock the year round—when Nature is with him and when Nature is against him. If the breeding hen is molting, or is low in vitality, the chicks from her eggs will be weak. Out of season not more than 50 per cent. of the eggs are likely to be fertile.

Economy in Feeding Rancocas Strain

In egg farming there is a great economy in feeding if, as at the Rancocas Poultry Farm, white Leghorn fowls are used. It costs less to bring to adult size and to maintain a small hen than to provide for a larger one. The Rancocas white Leghorn hen weighs about four pounds at maturity and produces eggs as large as those of any breed. The size, shape, and color of eggs are decided by Nature, regardless of the size and color of the hen.

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A Standard Laying House. This Shows the Muslin Windows

Besides market eggs to sell at fancy prices, the general egg farmer with a noted strain of birds has unlimited opportunities to dispose of hatching eggs and day-old chicks in season. These can be produced cheaply and sold at high prices.

Fancy Fowls

The fourth advantage held by the general egg farmer with a successful line of birds comes through the natural occurrence of exceptionally well-pointed fowls that are eagerly snapped up by the fanciers and breeders. A great many are sold from this farm, for which we get as much as $5 for a hen and $70 for a cock. A sufficient number of the best are kept, however, to maintain our standard.

Care and Equipment Essential

There is no department of poultry culture which offers better chances for money making and fewer chances of failure than general egg farming. Failures in it are due to similar causes as in other departments of the business, but the opportunities for success are more numerous. Intelligent care and proper equipment are necessary to a successful chicken business. Birds are intensely nervous by nature and easily affected for good or ill. Their blood circulates faster, they breathe more rapidly, their bodily temperature is higher, they assimilate more food and increase in weight proportionatey faster than almost any other form of animal life. Whether they are kept at a profit or kept at a loss may depend upon a seemingly inconsequential act or omission in their care.

If a good strain of birds is lacking, if equipment is inadequate, if intelligence is absent, if management is slack, the chicken business, like any other business so managed, will go to wreck.

The Rancocas Unit

CHAPTER IV

Five Hundred Birds, the Famous "Rancocas Unit"

WHEN the first experiments with laying houses were made on the Rancocas Poultry Farm the birds had been running in flocks of 15 to each colony. Flocks of 100 birds were tried with gratifying results in increased vitality of stock, increased production and fertility of eggs, and a considerable saving in labor. After further experiments the Farm adopted the plan of housing, yarding, and feeding 500 chickens together. This plan operated with equal success, and has been adhered to. All the adult birds are now kept in flocks of 500 or more, requiring only 36 laying houses—or units.

Its Origin

Already the news of the success has spread abroad, and this arrangement is now generally known to the poultry world as the "Rancocas Unit."

The advantage of the plan over that of smaller flocks is, first, the economy of labor. With these 20,000 birds in flocks of 15, there would be 1,300 units scattered over a large area, instead of 36 units, thus greatly increasing expenses without any corresponding increase in income. The original small colony plan had also the disadvantage of costing more for housing, and of taking more space for suitable yards. Again, when kept in larger flocks, the fowls seem to be

The Way the Cement Floor of a Laying House is Laid Before the Building is Constructed

tamer, less fearful of being cornered, and not so prone to fight. These features make for a greater production of eggs and for a higher percentage of fertility.

There is Peace in the Flock and—Plenty

No hen is entirely unpopular; and all live in peace, getting plenty of food, exercise, rest, and room.

The Rancocas Poultry Farm is proud of the fact that it was the original plant to adopt the "Unit of 500" plan and thus demonstrate that it pays to concentrate.

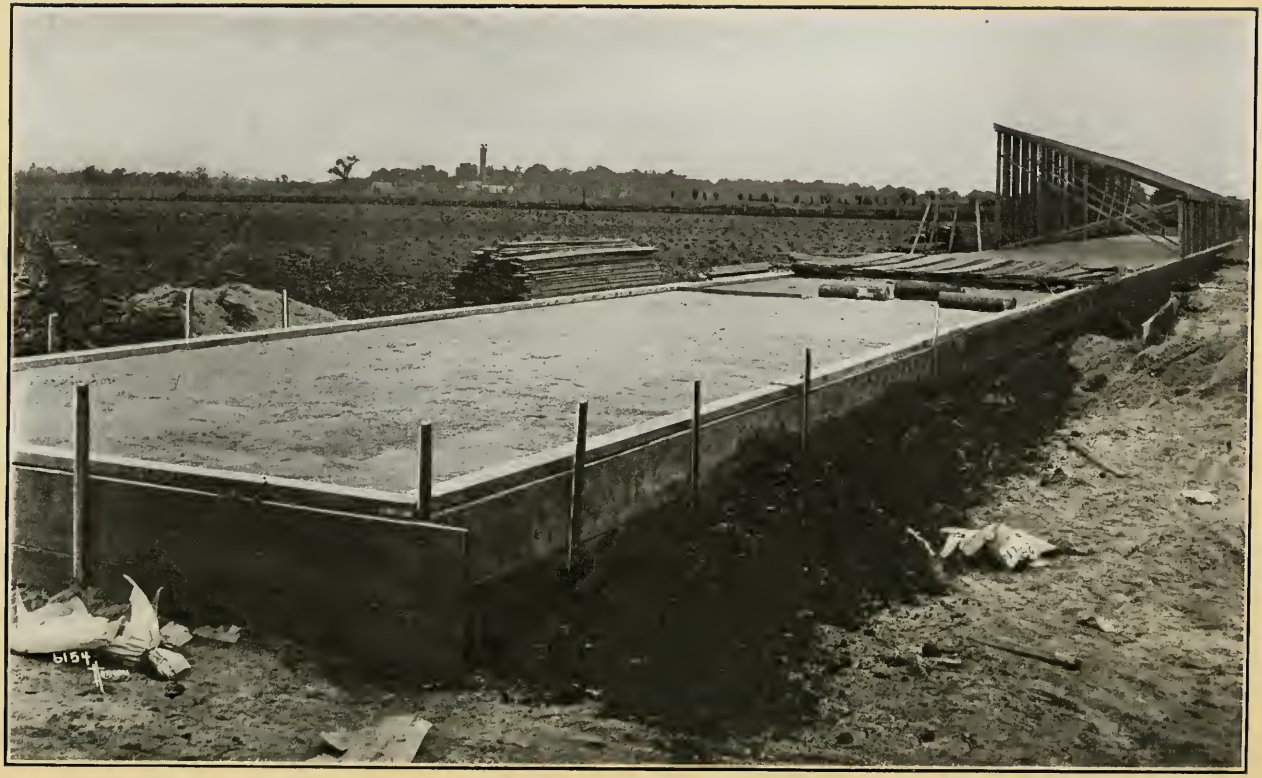
We shall now proceed to describe in a general way the construction of laying houses on the Rancocas Poultry Farm. Here will be found detailed working plans, specifications, and estimates hitherto unpublished. From this data any one may figure the cost of building one of these houses at the prices of building material current in his locality.

Laying Houses

All the 36 laying houses on this Farm face toward the south in order that they may receive the maximum amount of warm sunshine in winter. They occupy 75 acres of the highest land on the Farm.

Each house is surrounded by about 1½ acres of yard beautifully shaded by pine, oak, and maple trees. A trough and hydrant for running water are in each yard near the house. The yards are fenced with 2-inch mesh wire poultry netting, 6 feet high. The chickens seldom fly over this fence, as all their needs are cared for inside. The fence posts, placed 15 feet apart, are of cedar. One and one-half acres of yard makes practically a free range, without permitting the birds to wander far or steal nesting places. The yards are approximately square, with the houses as near the center of each as is practicable. All the laying houses, excepting those used for experiment, are uniform in construction. A description of but one standard house, therefore, will be given here.

The standard Rancocas laying house is 100 feet long and 14 feet wide. It is 9 feet 5 inches high in front, with a back



How We Lay Our Houses

height of 4 feet 5 inches. The carrying capacity of a house of these dimensions is 40 per cent. greater than if the width were reduced to 10 feet; and this greater capacity is secured by merely building additional floor and roof. The ceiling is of a height sufficient to permit the operator to do his work easily and without bumping his head. A higher ceiling would be more expensive to build and would also make the house colder in winter. The house with a low ceiling is kept warm enough in winter by the natural heat from the birds. The cubical capacity of a house of this size affords air enough for 1,500 fowls without becoming poisonous with carbon dioxide.

The Rancocas Laying House Details

The floor space available, including the roosting platform and the nests, affords each fowl over $3\frac{1}{2}$ square feet of room in the house. Many writers in dealing with this feature of laying houses say the white Leghorn fowls do not need as much space as heavier breeds. But Leghorns make up for their smaller size by greater activity.

Room for the Leghorns

The foundation of the standard laying house is made of concrete, 6 inches wide, set in a bed of gravel. It is deep enough to be below the frost line and high enough to prevent surface water from entering the house. The floor is concrete, $2\frac{1}{2}$ inches deep, laid over two-ply tar roofing paper and gravel. The sills are fastened to $\frac{3}{4}$-inch bolts, 12 inches long, set in concrete foundation. The frame is of hemlock and shortleaf pine. The sills and rafters are of $2'' \times 4''$ studs. The single-pitch roof is sheathed with yellow pine and covered with felt roofing paper, pitch, and slag. Shingle roofs gather frost on the inside in winter. The single-pitch roof is the easiest to build and gives the highest vertical front exposed to the sun's rays. Also, it throws all the rain water to the rear. The doors and roosts are also yellow pine. The 72 nest boxes are made of white pine, as this wood is easily scraped and

The Single-Pitch Roof

In Process of Construction

cleaned. The sidings are of cedar or pine, backed on the north side with two-ply tar-roofing paper to keep out drafts of air. Inside of the back wall, between it and the roosting platform, is an enclosed air space that makes the house more equable in temperature.

These special kinds of wood are used because they are easily procured and are best adapted to the purpose. Eleven of the window sashes contain glass panes; the remaining ten are filled with plain muslin cloth, and swing inward on hinges.

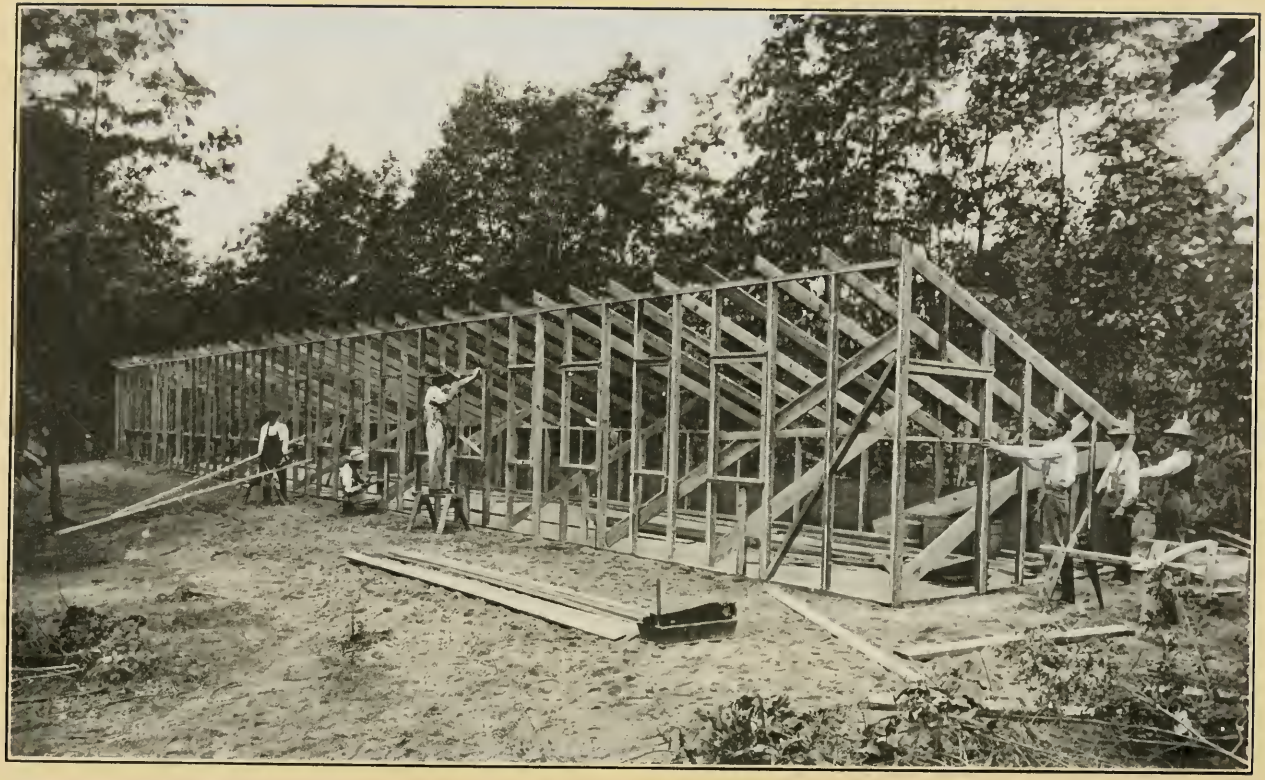
With this congenial and healthful environment the hens are content and busy. They eat, drink, scratch, lay eggs, cackle, and sleep naturally—which means happily.

A laying house constructed in this manner is absolutely dry, yet is simple, convenient, permanent, and reasonable in cost. It is well lighted, well ventilated, without drafts, roomy, and serviceable. Including all material, work of construction, piping for water, and fencing, the total cost is about $500. As the house will last 30 years, the cost per fowl ($1) makes the housing expenses but $3\frac{1}{3}$ cents per head a year. Beside the construction and economy, there is a more important saving in the matter of labor to care for the house. None of the operators on this farm cares for less than five houses. In fact, there is one man who operates seven houses, caring for about 4,000 chickens. This includes cleaning, feeding, and watering, collecting eggs, and general oversight.

Advantages of Construction

If the houses were less simply constructed and equipped one man would have all he could do to look after two of them. Economy of construction, convenience in management, comfort and cleanliness for the chickens, with protection against natural enemies, are striven for, and secured to a remarkable degree, on the Rancocas Poultry Farm.

Plenty of fresh air, without drafts, gives vigor and snap to the human being; and it seems to work equally well with the hen. This is why laying houses on the Rancocas Poultry



The Carpenters at Work

Farm are equipped with many muslin windows; they permit fresh air to enter at all times, keeping the house clean-scented and pure during severe weather when the other windows are closed. In mild, or warm, weather all the windows are kept open constantly, except at night.

The Windows

Inside of each glass window, wire netting is stretched across the lower half of the frame. The upper half of each glass window is stationary, only the lower part sliding open. With the muslin windows, the wire netting is fastened on the outside. In the case of the two muslin windows next to the ends and the one in the middle, the netting is tacked directly to them and they are so arranged as to be easily removed altogether. This facilitates the removal of dirt when cleaning the houses. Without fresh air coming into the houses constantly they would be damp, depressing, and disease breeding, with consequences to the fowls of colds, sniffles, and roup; and trouble and loss to the Farm.

Like every other problem on the Rancocas Poultry Farm, that of how much muslin window space and how much glass window space to use in the laying houses was carefully worked out by tests. Two houses were built, one with nine small glass windows and twelve large muslin windows, the other with twelve large glass windows and nine small muslin-covered openings. The accurate record of a winter's experiment showed that the house with more glass windows was on an average two per cent. warmer in temperature than the other, but more liable to variation by reason of greater humidity in the confined air and the condensation of moisture on the windows.

Testing Window Space

The house with the fewer glass windows was dryer but did not receive sufficient light during dark and snowy days to encourage the fowls to scratch for their food and thus get necessary exercise. Too much glass makes a house cold at night in the winter months and warm in the summer. The

The Rancocas Standard House

windows, being placed high and vertical, permit the sunlight to reach the back of the house.

From these experiments originated the present standard equipment of 11 glass windows and 10 muslin windows.

The muslin windows are above the level of the perches, so the fresh air coming through them circulates above the heads of the fowls at all times. Artificial heating is unnecessary and undesirable, as the fowls are healthier without it. With the amount of cold air controlled by the muslin window space, the combs of fowls are not frozen in zero weather.

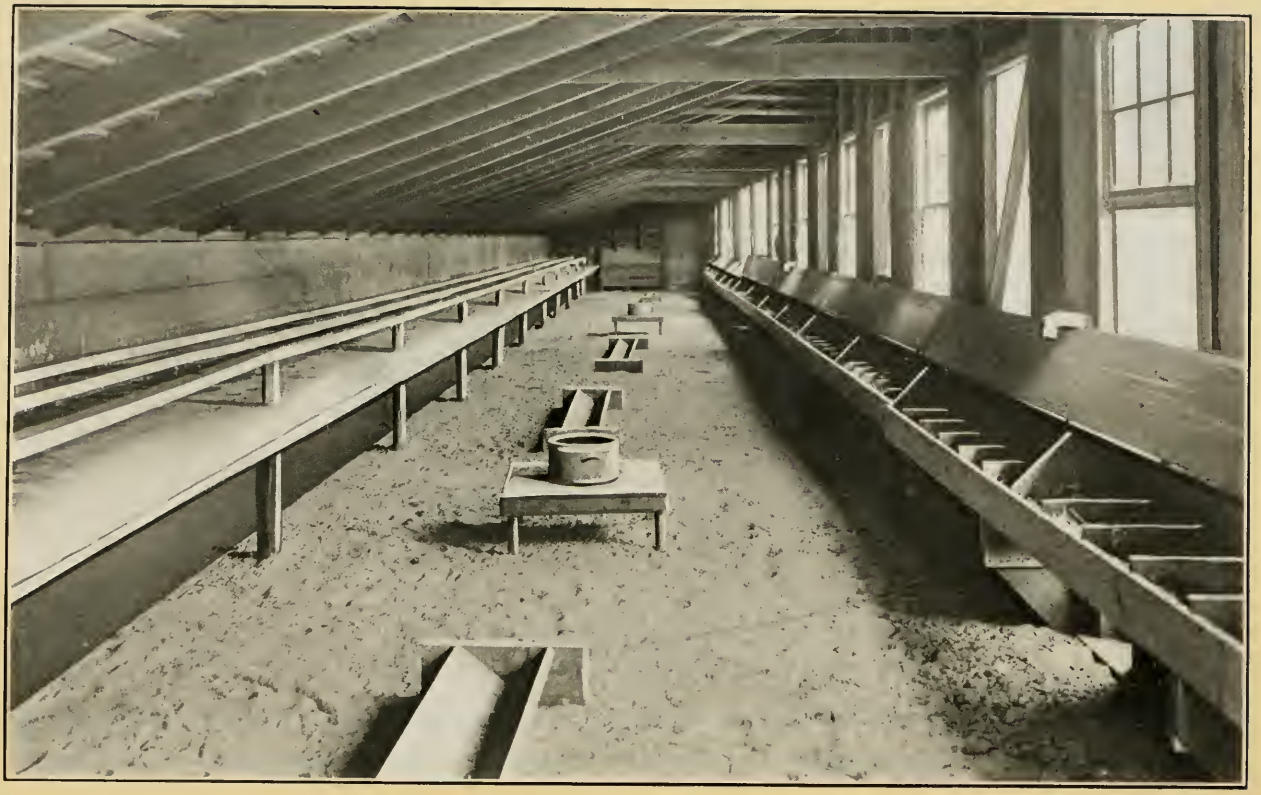
Cement Flooring

In the literature of poultry raising much has been said for and against cement floors. At this Farm study and experiment were again resorted to. Before cement floors were adopted, there developed in two flocks bad cases of roup, caused by dampness. To keep the disease from spreading, and to be certain of not breeding from these fowls, all of them were killed.

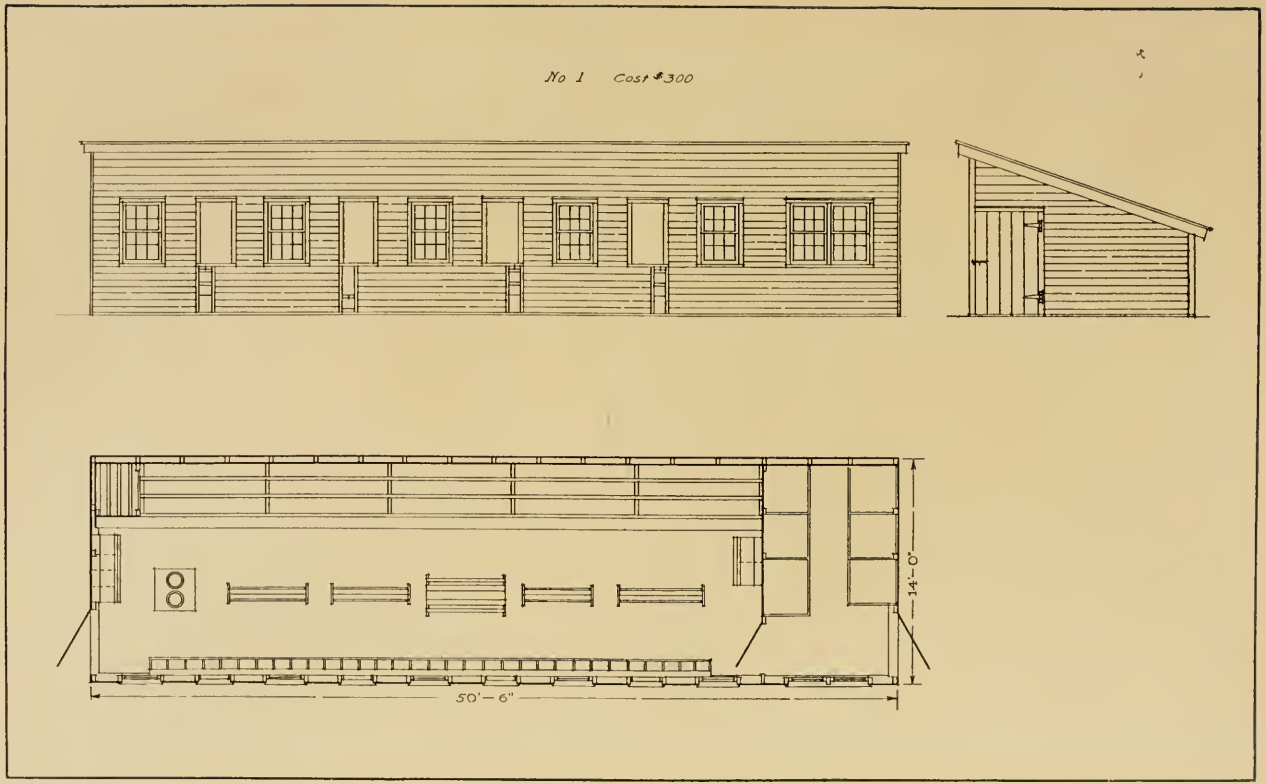
Then cement floors were laid in the houses to make them dry. Since that time numerous other considerations have strengthened the Farm in its adherence to cement floors. For instance, by chemical analysis, it is known that when 3½ feet of floor space is given a bird in a house with only an earth floor, the soil becomes contaminated to a depth of 15 inches in a year. To remove and replace so much soil twice in a year—and even then one cannot be sure that all the contamination from droppings has been removed—is more expensive than to build a permanent concrete floor. Besides protection from dampness and avoidance of annual expense to replace an earth floor, cement floors are very durable and prevent rats from tunneling into the building and stealing feed, eggs, and fowls.

Advantages of Concrete

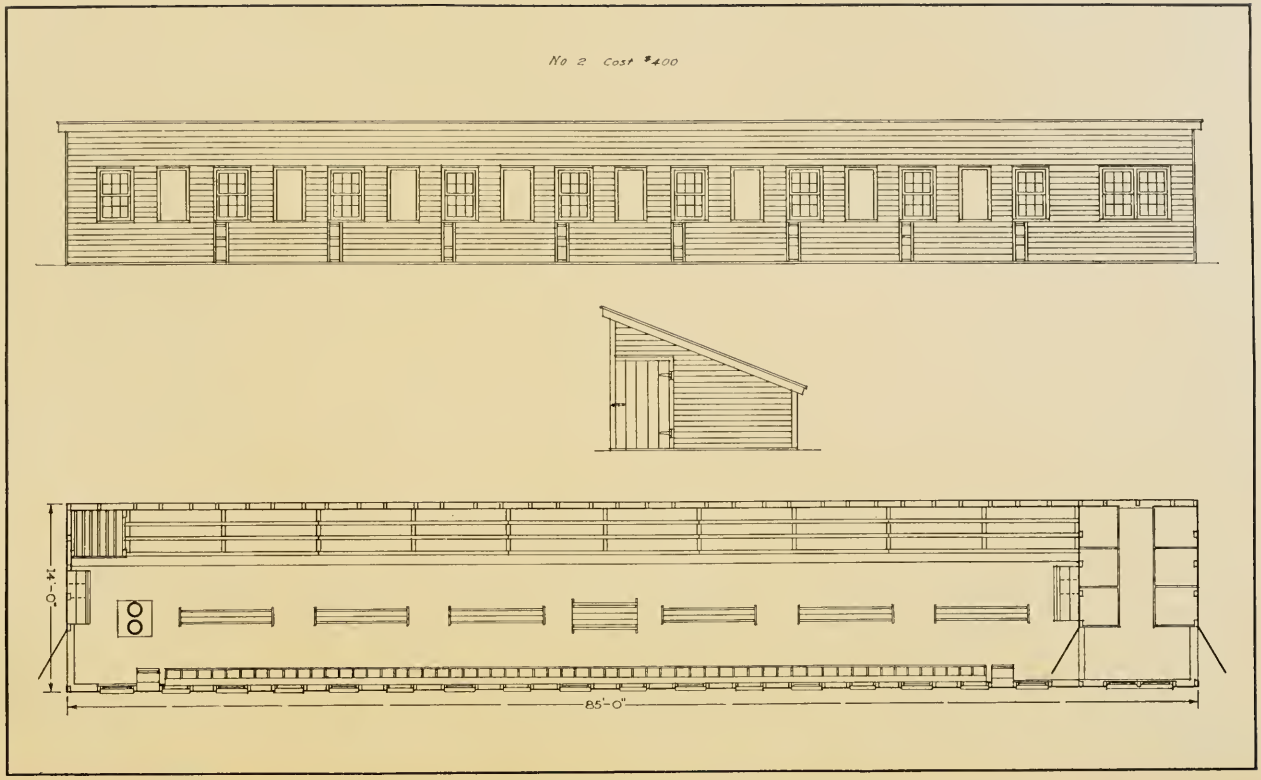
During the summer months the concrete floor is covered with 1½ inches of sand. This is newly spread when the winter litter is removed in March. The sand tends to absorb any



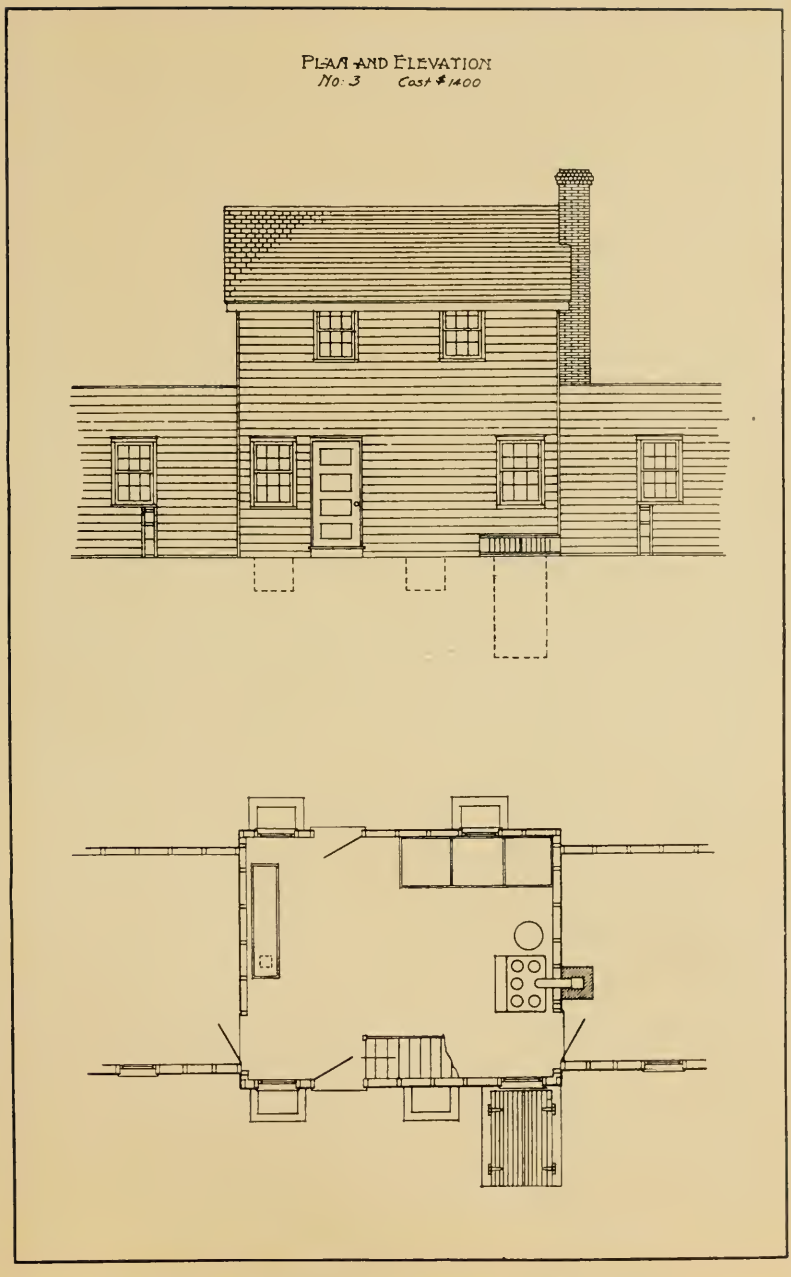
Interior of a Rancocas Standard Laying House



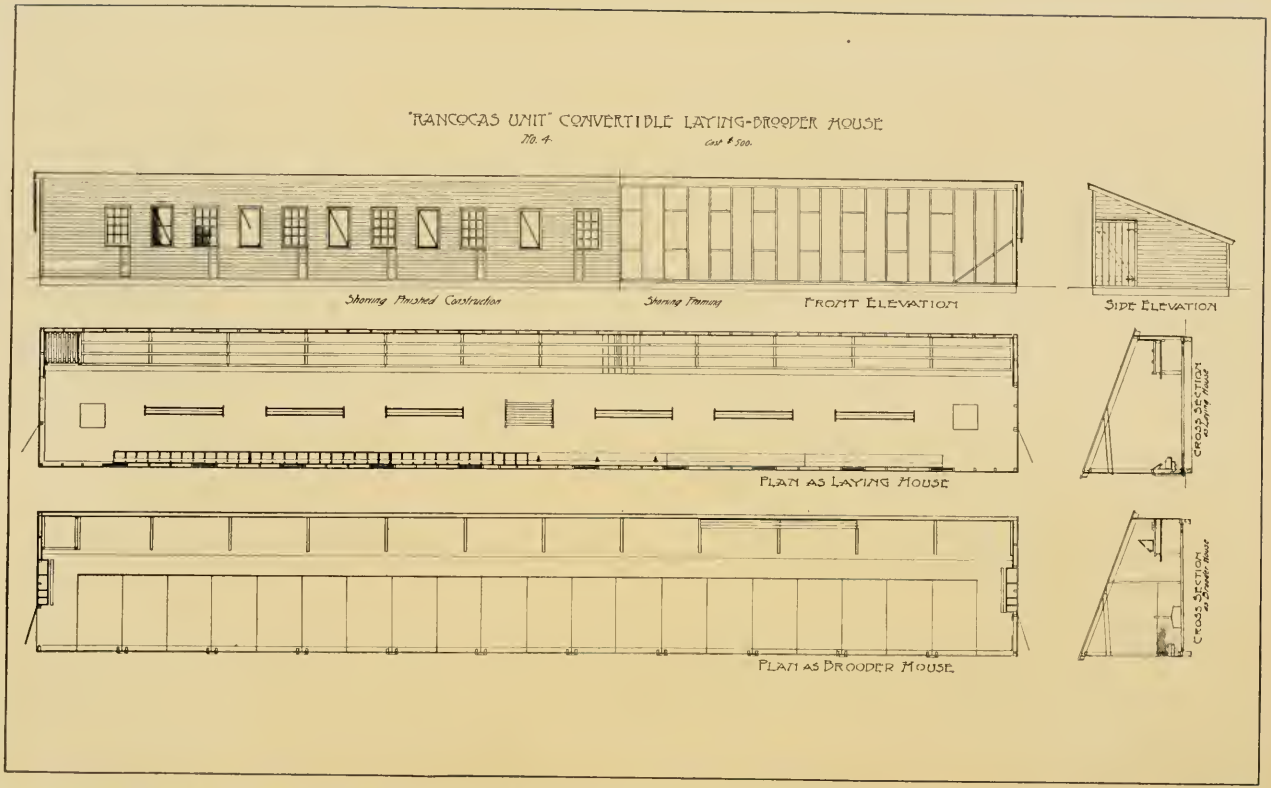
Floor Plan, Front Elevation, and Side Elevation of a $300 Plant. See Pages 132 and 133 for Description



Floor Plan, Front Elevation, and Side Elevation of Building for a $400 Plant



Elevation and Floor Plan of Feeding and Mixing House



Front Elevation, Two Ground Plans, and Side Elevation for a Standard "Rancocas Unit" Convertible Laying and Brooder House

moisture floating in the air; prevents the birds from getting "bumble" feet; and keeps the house in a sanitary and wholesome condition. In the fall, when the birds are through molting, this sand is replaced with fresh sand and covered with straw—sheaves cut into halves and left for the birds gradually to break up. An inch or two of new straw is added occasionally to freshen the litter, until by January it is 6 inches deep. On days when the fowls are kept in, the sand and straw afford excellent material for the hens to scratch and wallow in.

Busy Laying Eggs

CHAPTER V

Relating to Nests, Roosts, Mites, And Disinfecting

THE nests with which the laying house is equipped are in long rows under the windows. This economizes room and facilitates the gathering of eggs. It is asserted by many that hens' nests should be kept dark, not to increase egg production, but to prevent egg eating. With all the hundreds of light and open nests on this Farm, the first case of egg eating has yet to be discovered. The secret is that in our system of feeding and care, the hens do not lack protein, lime, or gluten; therefore, they are not driven to egg eating to satisfy natural desire for such food elements. Were egg eating natural, the priority of the hen or the egg would indeed be an enigma.

On the basis of 72 nests to a laying house there is one nest for every seven hens. As the nests are 12 inches square, two hens often occupy one nest at the same time.

Seven Hens to a Nest

Each nest is easily accessible to the hens. Cut straw in the nests, kept clean by occasional renewing, insures unbroken, clean, white eggs and makes the laying places comfortable for the hens. The use of cut straw, instead of whole straw, gives an opportunity for economy when replacing soiled parts. At night-time the hinged covers are let down to keep

Five Hundred Layers Asleep

the chickens from roosting on the nests and fouling them; and also to discourage broodiness.

The roosts, which are in the laying houses, consist of three level, parallel rows of perches, and a platform, extending the length of each house. The perches are level so that there will be no crowding on an uppermost one. The platform is high enough above the floor to allow easy cleaning, sunlight, and space for the fowls under it. The perch rails are of pine wood, 3 inches by 2 inches, and 10 feet long. They are laid on supports, sidewise and unfastened, 9 inches above the platform. The perch rails being movable, makes it easy for the operator to scrape, turn, and disinfect them; and to move them out of the way when cleaning the platform. Each fowl has about 8 inches of perch room, which is ample for white Leghorns.

The Roosts

White Leghorn hens have less inclination toward broodiness than other breeds. The few that do manifest this inclination are put in a box, or cage, called the "cooler," which is placed over the perches in a corner of the laying house. The cooler is built with a slatted floor and without perches. The air passing through this floor effectually cools the hen's blood and restores her to normal condition, usually within 48 hours. No hens are set at the Rancocas Poultry Farm, their services as egg layers being too valuable.

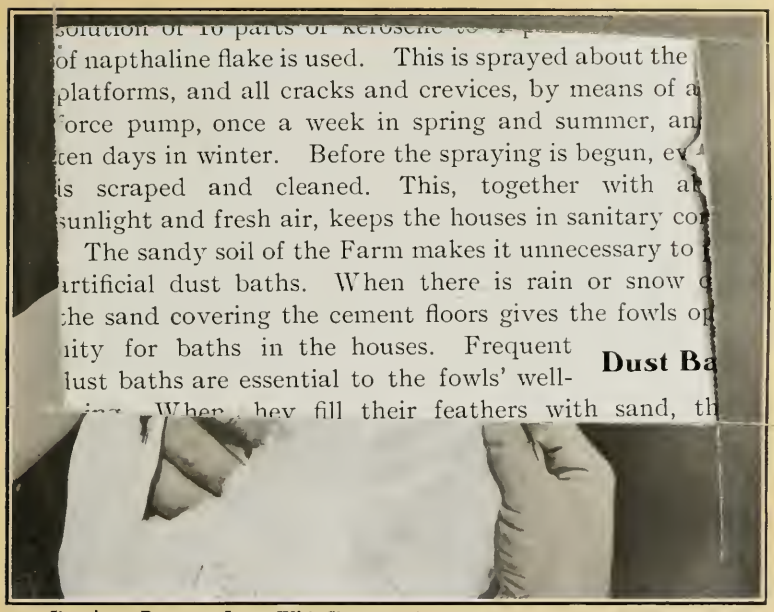
The "Cooler"

Mites are the bane of unclean, improperly managed poultry plants. Unfortunately, how to avoid them and the dire results consequent upon their presence is not well understood by the majority of poultry men. In fact, many persons know of no distinction between red mites and the varieties of lice that are comparatively harmless. The red mite conceals itself under the perches, and in any available cracks and crevices near the roosting places. There it deposits its eggs, which hatch out by thousands in a few hours. It is a deadly parasite and lives entirely on blood extracted from

Mites and Lice

Cooler, Hoppers, Drinking Stands and Interior Equipment

the body of the chicken, which causes a falling off of the egg yield. This manifests itself in contagious scaly legs, a pale comb, and a drooping and drowsy general appearance of the bird. Most of the mite's nefarious work is done at night-time, when the fowl should be resting. Every precaution is taken that mites shall not appear on this plant.


of napthaline flake is used. This is sprayed about the
platforms, and all cracks and crevices, by means of a
force pump, once a week in spring and summer, an
ten days in winter. Before the spraying is begun, ev
is scraped and cleaned. This, together with a
sunlight and fresh air, keeps the houses in sanitary co
The sandy soil of the Farm makes it unnecessary to
rtificial dust baths. When there is rain or snow
he sand covering the cement floors gives the fowls o
nity for baths in the houses. Frequent
lust baths are essential to the fowls' well-
Dust Ba

Showing a Rancocas Layer With Clean, Healthy Legs, Due to Proper Disinfectants, Compared With a Borrowed Scaly Leg Fowl

Lice do not sap the vitality of fowls as do mites. In fact, a hen is just as happy with a few lice as without any, for they live on the dry scale and dandruff discharged from the hen's skin and feathers. Sanitary housing and plenty of dust baths keep lice from becoming a pest. Chickens never wash in water, as do many other birds, but keep them-

Cleaning and Disinfecting Perches

selves sanitary and cleansed of insects by washing with sand and dust.

There is no doubt of the absolute necessity of using a disinfecting solution on a well-conducted poultry plant. And this disinfectant must be inexpensive, must be powerful and certain in action, and must be harmless to the birds. There are many excellent commercial preparations, but the Rancocas Poultry Farm makes its own solution and saves the dealers' profit. A solution of 16 parts of kerosene to 1 part of napthaline flake is used. This is sprayed about the perches, platforms, and all cracks and crevices, by means of a bucket force pump, once a week in spring and summer, and every ten days in winter. Before the spraying is begun, everything is scraped and cleaned. This, together with abundant sunlight and fresh air, keeps the houses in sanitary condition.

Sure Death to Mites

The sandy soil of the Farm makes it unnecessary to provide artificial dust baths. When there is rain or snow outside, the sand covering the cement floors gives the fowls opportunity for baths in the houses. Frequent dust baths are essential to the fowls' well-being. When they fill their feathers with sand, the fine particles have a scouring action, removing dandruff and lice. The less dandruff on a hen the fewer the lice that can feed there. See page 110 for illustration.

Dust Baths

The Rancocas Poultry Farm's water supply is from a stream on the property. It is constantly under control and, therefore, free from the danger of contamination.

The Water Supply

From troughs in the yards the chickens get their water for about 11 months of the year. When they are confined, 10-quart open crocks of water are placed on stands inside the houses. Water has never frozen in the houses, even during zero weather outside. When it is remembered that an egg is about two-thirds water, the importance of quantity and purity is evident.

Packing Eggs for Market Before the Administration Building Was Finished

CHAPTER VI

The Story of the Egg—It is Full of Meat

DURING a chicken's pullet year she grows her cluster of eggs—four or five hundred little yolks, each about the size of a berry seed. From this original cluster must be developed all the eggs the hen can ever produce. When the cluster is laid, or exhausted from any other cause, the hen can lay only a yolkless affair that is of no value. While the hen's laying condition is normal, she will develop and lay eggs regularly, but during molting and broody seasons the development of eggs stops—the little members of the cluster lie dormant.

Rancocas Aims to get ALL the Eggs

The Rancocas Poultry Farm aims, by careful feeding, to get the entire cluster of eggs Nature gives a hen; and, more than that, by using a non-setting breed, and exercising control over the period of molting, to get as many as possible at the very time when prices are highest.

As to fertility of hatching eggs, 94½ per cent. was the Rancocas average during 1909 and 1910. This unsurpassed record is due to the fact that the chickens are carried to the highest possible level of good health, vitality, and activity; and that their management is based upon scientific and practical principles.

An Unsurpassed Fertility

The Crop That Pays

For every 20 birds in a laying house, one male bird is furnished. Tests for percentage of fertility were made with but five hens to one cock, resulting in less than 90 per cent. With 500 hens to 25 cocks, all at liberty in a spacious house and yard, there is but little rivalry and fighting. No hen is entirely neglected; and careful watching discovers whether or not the hens take kindly to a new male. Chickens, as well as other bipeds, have strong likes and dislikes. It is this Farm's experience that hens lay more eggs and are generally more healthful when males run with the flock. Care is taken, of course, to avoid mating birds of the same age or parentage. Condiments to force laying are absolutely tabooed; they are useless, unnecessary, and injurious.

First Principle of Feeding

The system of feeding for laying hens at the Rancocas Poultry Farm is a factor of importance second to none; for primarily upon this feature the success or failure of an egg farm depends. Profitable feeding for eggs begins from the time of the chick's infancy and continues until all of the cluster of eggs has gone to market. In her wild state the hen lived upon seeds, green food, bugs, worms, and water.

It is therefore a mistaken idea that corn alone is sufficient for a hen. Corn to a chicken is like cake and candy to a child. Chemistry declares and experience proves that a laying hen needs starch, gluten, oil, meat, and shell; that she needs animal food to make albumen; that she requires green stuff as a tonic and a regulator; and that water is absolutely necessary. As has been aptly said, "The laying hen is a hard drinker and hearty eater." But she neither overdrinks nor overeats if furnished the proper foods systematically. Systematic feeding is of importance; "a feast-or-a-famine" style is unhealthy for fowl as well as man. The instinctive appetite of a hen, carefully watched and gratified, is the best guide to rational feeding. When these principles are applied, robust health and stamina,

"A Hard Drinker and Hearty Eater"

Cutting the Green Feed on the Farm

rich blood, healthy fat, strong muscles and bones, and fertile eggs will result. For several years now the Rancocas Farm has fed chickens upon these principles, securing a profitable percentage of eggs and avoiding losses from overfatness and indigestion. It is not claimed that application of these principles constitutes "the only system," but that it does give good results. And, knowing it is good, no change is made.

Don't Ride a Hobby

Many failures in the chicken business are due to constant vacillation on the part of the novice; or to his adherence to poor rules composed by some one with certain mixtures to sell or with a rigid hobby to ride. There are no hard and fast rules that can be applied with success to every case.

General environment, breed of fowls, and prices of feeds must be considered in determining the right rations. Nature offers the egg farmer a valuable lesson in making the spring-time productions an easy matter. Fowls at liberty to roam find abundant animal and green food and fresh air on their range. This, with grain and exercise, furnishes a perfect ration. The egg farmer who can furnish in winter rations and conditions that nearly approach those of spring will surely reap his reward.

The Morning Mash

The first feeding of the day on the Rancocas Farm is a mash placed in the troughs of the laying houses between 7 and 8 o'clock in the morning. Its composition by weight, for 500 chickens, is as follows:

8	pounds bran
7	pounds middlings
7	pounds corn and oats, ground
4	pounds beef scrap
5	pounds clover, chopped fine
½	pound fine oyster shell
3½	pounds linseed meal
Total, 35	pounds

Scattering the Green Feed on the Bare Ground

Each chicken, therefore, gets about 1 ounce of mash at this feeding. The mash is thoroughly mixed with enough water to leave it crumbly but not mushy. If it were wet enough to be mushy it would be unpalatable and cause diarrhea.

Beware of Diarrhea

The clover in this feed is scalded in hot water before it is mixed, to keep it sweet, thus avoiding another cause of diarrhea. Scalded mashes keep twice as long as those mixed with cold water.

The beef scrap in this ration closely resembles in food value the bugs and worms fowls find while roaming at large. It supplies much of the protein, with enough nitrogen and phosphorus, to make the chicken's meat lean and to strengthen ligaments, tendons, nails, beak, blood, and feathers. It enters also into the composition of eggs. Roughly speaking an egg is 11 per cent. protein, 8 per cent. fat, 8 per cent. ash, 11 per cent. shell, and 62 per cent. water. A hen is 25 per cent. protein, 20 per cent. fat, 4 per cent. ash, and 50 per cent. water.

Note the Droppings

The condition of the droppings is an indication of the hen's health. If they are soft, or pasty, and yellowish or brownish, the hen lacks meat. If they are watery and contain red spots, too much meat is being fed. Greenish watery droppings indicate unsanitary conditions in environment, food, or water. If they are of a consistency to hold their shape, but not too hard, the indication is good.

Only a good grade of beef scrap should be used in this mash, or at any other time. Occasionally beef scrap has been returned to the dealer, tests on the farm showing the meat to be bad. Tests are made by putting a handful of beef scrap into two or three quarts of scalding hot water and covering the pail with a cloth. After two or three minutes the cloth is lifted, when the odor of the mixture quickly informs the experimenter whether or not the beef scrap is fit for food.

The Hens Are Fond of the Green Feed

If it is good, the odor from the test will be not unlike that of good beef extract.

When to Feed a Mash

As to the proper time of day to feed a mash, much has been said and written. Experience shows that best results come when it is fed early in the morning, for the hens seem to get the most benefit from it at that time. During the night the fowls have digested the food consumed the day before, and have comparatively empty crops and healthy digestive organs, so that the morning mash is quickly assimilated, only little time being required to grind the ration in the chicken's gizzard.

The Scratch Feed

The morning scratch feed is scattered broadcast throughout the yards at about 9 o'clock. The grains falling upon the pine needles and sandy ground give the fowls incentive to scratch, and this provides sufficient exercise to keep up their physical condition. When the ground is covered with snow or is wet with falling rain, this feeding is done in the sand and straw litter within the laying houses.

Sometimes—if a flock is sluggish, loath to move, and in obvious need of more exercise than it has been taking—this feed is divided into two parts and scattered at two periods, half an hour apart.

For a flock of 500 chickens, the morning scratch feed is $7\frac{1}{2}$ pounds of barley and $7\frac{1}{2}$ pounds of hulled oats, well mixed. Each fowl gets about half an ounce.

Green Feed

The third feeding of the day is of green stuff chopped to half-inch lengths, or of vegetable matter in the winter, given between 10:30 and 11 o'clock in the morning. A full bushel basket of green food, weighing 30 pounds, is scattered to 500 hens.

This is a tonic and food greatly relished by the fowls. It furnishes much of the yellow matter in the yolk of hens' eggs, beaks, and legs. It makes eggs more palatable, more fertile, and the chicks hatched from them more vigorous. Clover cut from the late fall's seeding, or rye before it has grown

Collecting Eggs While the Hens Are Out Feeding

coarse, is the green stuff used in spring, large quantities of which are grown on the farm. When either of these becomes scarce, Canadian peas, young and tender corn, or clover hay, takes their place. Clover, however, is the green food most relished by the fowls; it is juicy and rich in nitrogen.

Turnips are Valuable

To supplement the winter ration of chopped hay, rutabaga turnips and sugar beets are fed. Two thousand bushels of these vegetables were grown and used on the Farm last year. They are kept in a long pile 4 feet wide and 3 feet high, covered with 6 inches of straw, with 6 inches of soil on top, ready for winter use. Small openings in the top of the covering permit heat and moisture to escape from the vegetables. These vegetable foods are fed without being cut up—a bushel being thrown to 500 fowls, for them to pick at as wanted. It is astonishing to see how quickly the chickens make away with them.

No green food is grown in the yards and runs on the Rancocas Poultry Farm, as it is desired to keep them free for the chickens' scratching and exercise, rather than for pasture. They are ploughed up twice a year, or even oftener. A serious objection to planting the yards and runs for pasture is that ground so planted must eventually become unsanitary. The roots and parts of plants not eaten by the fowls, forming humus, would soon prevent rain from filtering through and cleaning the yards. With the top soil kept free from humus, gap worms, which do not thrive in clean, dry soil, are eliminated. The absence of dirt and moisture contributes also to the avoidance of colds and liver disorders.

Noon and Evening Feeds

The noon feeding is exactly the same as the morning scratch feed just described. It is thrown around the yards when the operator collects eggs at noontime. The hens usually come off the nests at this time and give the feeder a chance to gather the eggs more quickly than if he had to feel under a number of layers.

Morning Scratch Feed

The evening ration is placed in the troughs in the laying houses shortly before dark, so that the hens can easily fill their crops just before going to roost. A large part of the hen's egg making goes on while she sleeps; most of the evening feed, therefore, is transformed into eggs.

This last ration of the day consists of 50 pounds of wheat and cracked corn, mixed, for 500 chickens, each chicken getting over an ounce and a half. The proportion of corn to wheat is increased as the weather grows colder. During April, May, June, July, and August, it is usually in the ratio of 1 of corn to 4 of wheat; in September, October, and November, 2 to 5; and when the weather becomes frosty, it is changed to half corn and half wheat. In December, January, and February, if the weather is from 15° to 10° F. above zero, the proportion is 3 parts of corn to 1 part of wheat. Below this temperature the night feeding is all corn.

When an all-corn evening feed is given, the noon feed is changed to wheat. Corn is chiefly valuable in producing bodily heat for the fowls. Great care is taken that the hens shall not become overfat and thus disabled for proper laying. It is a rule to place in the troughs at this feeding a slightly larger amount than the fowls will consume, so that timid or late comers need not go to roost hungry.

They Must Not Get Too Fat

The fowls are fed frequently so that they will not gorge at any one time and become lazy. Idle fowls contract bad habits, besides going out of condition from lack of exercise. The hens are kept slightly hungry during the day and only before roosting time are given all they can eat. This last feeding is not burned up in exercise, but goes directly to the making of eggs.

In addition to this regular hand feeding, two large, open hoppers are kept in each laying house. They contain a supply of dry mash similar to the morning ration but with the beef scrap omitted. This provides nourishment for any bird that may have gone short in the regular feeding.

Hopper Feeding

An Overfat Hen

In other apartments of the hopper are mica grit, charcoal, and beef scrap.

Grit is essential to the welfare of chickens. Their gizzards take the place of teeth and constantly rotate the sharp, irregular pieces of grit when food is there, grinding the food preparatory to assimilation. Without sufficient grit, undue strain is thrown on other parts of the fowl's system, often resulting in disease by allowing the food to pass through the bird's body without being assimilated.

Much of the mineral matter used by fowls comes from the grit consumed. Not a great deal of grit is taken from these hoppers, however, as the natural sand in the yards furnishes

a kind better liked by the hens. But mica grit is before them in the houses, to use if they want it.

The charcoal aids digestion and prevents disorders by sweetening the organism of the fowls. It is a powerful absorbent, taking up the gases, impurities, and acids, thus acting as a corrective when the stomach is sour. Chickens partake freely of charcoal.

Hopper feeding of beef scrap is regarded on the Rancocas Poultry Farm as emphatically necessary.

Note This Rancocas Experience

No two layers are in exactly the same condition: one may be overfat, requiring more protein and less fat; another just the reverse. It is impossible for the man caring for the birds to know the precise conditions of every fowl, or always to gauge the proportions of food most desirable. This hopper of beef scrap puts such problems up to the birds themselves; and they instinctively are the best judges of what they need. On the Rancocas Poultry Farm, under this method, the hens produce more and better eggs than under any other method tried.

In small hoppers, one at each end of the laying house, coarse oyster shell is placed. A hen laying heavily does not get enough lime from the grains to form the shells of her eggs. This is supplied by the oyster shells.

Water as Food

Of all foods on a poultry plant, water is the one most needed. The general farmer often lets every water trough freeze and wonders why he gets no eggs. Abundant quantities of fresh water are before the chickens on THIS FARM at all times in crocks in the laying house, and in troughs in the yards. The crocks and the troughs are washed frequently. The first thing a hen does in the morning, the last thing at night, and many times between, is to drink water. The food consumed in greatest quantity at the Rancocas Poultry Farm is water.

After the birds have gone to roost, the night watchman comes on duty. At sunrise he gives them fresh water, and

Fowls Drinking at the Hydrant

opens the windows to let in all the fresh air and sunshine possible. The hens keep busy, until the regular feeders come around, picking up any food left from the previous evening.

Gathering The Eggs

The gathering of eggs from the laying houses is done in common feed pails, at noon and just before dark. The first collection yields two-thirds of the total number, as the hens generally begin laying at 9 o'clock and are finished by 2 o'clock. The eggs are taken to the egg room, where they are sorted according to size and shape, and packed in crates, ready for shipment on the afternoon train. When hatching eggs are wanted, eggs of medium size, uniform shape, air-tight, and with smooth shells are selected and placed in racks to avoid evaporation, with the large end up in order to establish the air cells. No pullet eggs are used or sold for hatching. The few undersized, misshapen, or rough eggs occurring are culled out, the remainder going to market as premium eggs, to be served on New York breakfast tables the following morning. The small eggs and any others not up to premium quality are sold at a reduced price. But this kind is almost unknown on the Rancocas Poultry Farm. Usually it is an overfat hen that lays round, double-yolked, or badly shaped eggs, as the hen's internal fatness affects her oviduct and makes the eggs misshapen.

Food Determines Size of Eggs

The size of eggs laid by the same hens can be influenced by the quantity and quality of food they are given. The Rancocas Poultry Farm sold a pen of birds to a man who later complained that the eggs he gathered were getting smaller every day—and asked Why? Through correspondence it was discovered that the hens were not being properly fed. A copy of the Rancocas feeding formulas was sent to this man, and within three weeks he wrote that the hens were laying eggs as large as when he first received them.

Rancocas Hens in Early Molt

CHAPTER VII

Molting: The Time When the Hen Needs Special Care

THE price of eggs is highest in the fall and winter months, when hens are molting, and laying less frequently. Hens cannot molt and lay at the same time; shedding old feathers and growing new ones takes much of the fowl's strength. And they need special feeding and watchful care during this critical period.

The average farmer's flock usually molts its feathers in November, December, and January. The result is, that as he furnishes 90 per cent. of the eggs available for market, the quantity falls and the price rises. As soon as the molting is over—and this term is made to include the growing of new feathers—the farmer's hens resume laying eggs as before and prices go down again.

Rancocas Hens Molt Early

Rancocas hens are made to molt early in the fall so that they will be laying well in winter, when the price for eggs is highest. For the largest profit a good proportion of eggs must be secured in winter. One extra egg a week from each hen in winter will pay for all she eats.

Forced molting is brought about on the MILLION EGG FARM by confining the birds in their houses for three days and feeding them much less than usual (about one-half of the regular rations) in order to reduce the surplus fat. In

One Thousand Rancocas Pullets Shedding Their Wing Feathers Before Beginning to Lay

the middle of August the feathers are dried nearly to the end of the quill and it requires only the reduction of surplus fat and an increase of oil-containing food to make new feathers and push the old ones out. Therefore, the decrease in the feed during the period of confinement is principally in foods containing protein and oil, as feathers are composed largely of these two constituents. After three days the birds are liberated and the regular quantities of food resumed, but the proportion of nutrients in the ration is changed so that the ration will assist materially in the formation of feathers and the general building up of the hen's system.

How It Is Done

Each week during a month, a pound of the corn is omitted and a pound of linseed meal is added, thus making a change of four pounds in the ration in four weeks. Then as the new coat of feathers is seen coming out the variation is reversed until the regular proportions are again reached. This method of making the hens shed their feathers and grow their new plumage before cold weather begins is operated successfully. The birds get through the molt quicker and with more uniformity, and enter winter in better condition than if they were fed on the usual egg-producing ration during the molt. And the great demand for winter eggs is met.

The Pullets Even Lay at Four Months

White Leghorn pullets hatched early in spring lay early in the fall and keep it up during the winter without molting. March and April pullets are November layers; May and June pullets are December layers. It is not an uncommon event on the Rancocas Poultry Farm for pullets to lay when about 4 months old, but this regarded as precocious and freakish. Pullets are not considered winter layers unless the average production of the flock is 33 per cent., that is, one egg from each hen every third day. It is a mistake to believe unreservedly that pullets can be real winter layers at the age of 4 months, though the claim is often advanced. Properly hatched and raised, a normal white

The Ten Men Who Run 20,000 Layers

Leghorn pullet on the Rancocas Poultry Farm begins laying between her fifth and sixth months. With heavier and slower growing breeds the time must be longer.

There is a small house and yard on the Rancocas Poultry Farm set apart for the segregation of any fowls that become sick or injured. On a farm as large as the Rancocas there are occasionally hens which develop fallen combs, broken legs, etc. As a rule we do not advocate much doctoring, for while one bird is being dosed, a dozen may catch the trouble if it is at all contagious. This is much more expensive than killing the birds which develop a suspicious weakness.

The Hen in the Hospital

Sometimes, however, in the case of a cold which may lead to a roupy condition, a cure is effected by swabbing the eyes, nose, and throat of the afflicted bird with a feather dipped in a 20 per cent. solution of permanganate of potash. In cases of sneezing or snuffling, a few grains of permanganate of potash are added to the drinking water, sufficient to turn it to a pinkish tint. This usually helps the birds to health.

If a flock's appetite shows signs of failing, a piece of copperas, the size of a hickory nut, may be added to each quart of drinking water. This is the remedy usually employed on the Farm.

The old saying "an ounce of prevention is worth a pound of cure" can nowhere be more fittingly applied than to poultry. Sanitary conditions, proper feeding, and eternal vigilance prevent more trouble and disease than many men and pounds of cure can check. If the eyes and the combs of hens are brilliant in color; if the birds are alert and happy, they are in good laying condition. This is the best of all "secrets" for selecting a healthy hen in condition to produce eggs.

The Best of "Secrets"

The Eggs Standing on End, to Establish the Air Cells

CHAPTER VIII

Why Artificial Incubation Only Is Used on the Rancocas Farm

THE Million Egg Farm maintains an incubator department, to furnish stock, to replenish and increase its laying flocks, and also to supply part of the great demand made on it by other poultry men wanting day-old chicks. The outside demand for day-old chicks was twice as great during the season of 1909 as could be met, in spite of the fact that 59,380 were supplied. Besides the 59,380 day-old chicks sold in this season, 30,000 chicks were hatched on the Farm, to increase the egg production, to replace stock sold, and to furnish breeding stock for future sales.

Incubator vs. the Hen

All the hatching is done artificially. Hens are never used to hatch or brood chicks. Incubators, ever since their invention, have contributed much to the economy and comfort of chicken raising.

The average broody hen is often wild and unmanageable. She may have lice in profusion. If she is bad-tempered, the chicks become her victims. She often leads them into wet grass, thus stunting their growth or otherwise injuring them. And even the best of hens will sometimes break the eggs, leave them too long or altogether, and become the cause of worry by reason of the general uncertainty.

The Chicks Pipping on the Nineteenth Day

With hen incubation there is also the trouble of weaning the chicks before the hen will resume laying. With machine incubation there is certainty and accuracy; and a hen is not taken from her work of laying eggs. It can always be known to within a few hours when a hatch will be completed. And chicks may be had at any time of the year.

An incubator will do the work of 25 hens; its behavior is within control; it never grows bad-tempered; and it can be kept sanitary.

An Incubator the Equal of 25 Hens

Absolutely certain results will follow the proper use of a good incubator filled with good eggs. With poor eggs there will be a much smaller hatch in a good machine than if a poor machine and good eggs are used. If this were not so, the hen, which is comparatively a poor incubating machine, could hatch but few chicks. The use of good eggs is a prime requisite of success.

Hatching experience has been peculiarly wide and exhaustive at the Rancocas Poultry Farm. Incubator rooms, under various conditions, have been observed in competition. During the early part of 1910 three incubator rooms were used. One was almost entirely below the level of the surrounding ground; another was half above and half below, and the third was entirely above ground. Several makes of what may be called standard machines were operated. The first room incubated 5,200 eggs at a time; the second, 10,800; and the third, 16,000. Two men operated the machines, their hatches averaging 68 per cent. of the total eggs put in. Fertility of eggs was 90 per cent. or more.

Hatching Experiences

The lesson of greatest importance learned from the parallel operation of these rooms was that best results were secured in a basement cellar about 9 feet high; 6 feet being built below the surface of the ground.

The reason is that a properly arranged room in this relative position can be well ventilated and yet easily maintained at a steady temperature.

Half the Chicks Out of the Shell

In summer a cellar is naturally cooler than a room above ground; and in winter, warmer. A fluctuating temperature is a serious handicap. Fresh air is vital, for it supplies oxygen to the embryos and carries to them untainted moisture. Lamp odors, or odors of any kind, are extremely deleterious.

The Moisture Problem

The problem of how much moisture to keep in the air surrounding the eggs is of great importance; too much moisture, by expanding the embryo, makes the chick too large to hatch; too little moisture leaves it undeveloped. To find the proper humidity, experiments were made at the farm in 1907. Several nest boxes 18 inches square, with 8-inch holes in the bottom, were constructed. The holes covered with burlap and the nests, filled with eggs, were placed under broody hens borrowed from a neighboring farm.

A hygrometer was placed in a tight drawer under the eggs in each of these experimental nests, and arranged so that it could be read easily at all times. The nests were located beside an incubator set at the same time and containing a hygrometer.

An Interesting Experiment

Take one of the nests for example. A Plymouth Rock hen, in good setting condition, on 15 eggs, of which 14 proved fertile, hatched 11 strong and healthy chicks, a percentage of 73. Of the 360 eggs placed in the incubator only 53 per cent. hatched. Of the 360 eggs 320 were fertile. The hygrometer under the hen showed percentages of humidity, ranging from 55 to 60 per cent. during the several stages of the hatch; while the hygrometer in the incubating machine registered only from 36 to 42 per cent. Approximately the same percentages resulted in the other experiments, proving conclusively that the ordinary incubators do not furnish enough moisture.

Since these experiments were made the percentage of humidity in the incubator machines has been increased, with the attainment of hatches averaging, in all, 68 per cent.

The End of the Twentieth Day. Nearly All Out

The three incubator rooms referred to in the foregoing paragraphs, which were operated to ascertain the best method, are now replaced by one large basement under the new administration building. This basement is 3 feet above and 6 feet below ground. A further description will be given when dealing with the "Executive Building." It accommodates 252 incubator machines, each with 400-egg capacity. 100,800 eggs can be incubated there every 21 days. In its planning and construction full advantage of past experience was taken. It is scientifically kept at a uniform temperature. The floor, walls, and ceiling are concrete, therefore fireproof, and being finished with a smooth surface can be washed clean, and thus maintained in a perfectly sanitary condition.

The New Incubator Basement

At about the time the new incubator basement was begun, the International Poultry Sales Company brought out its own self-humidifying incubating machine, claiming for it decided improvement over the incubator previously used, because less labor and care are required to maintain an even temperature; and because it furnishes automatically the proper amount of humidity at all times under all climatic conditions. As with a caloric bottle, or an ice-box, insulation of a substantial kind is necessary to maintain the desired temperature. Cheap incubators usually lack proper insulation; in consequence the owner has to devote more time and use more oil, and then in the end have a smaller hatch. Putting fertile eggs into an ineffective incubator is like throwing good seed on stony ground.

The Self-Humidifying Incubator. A New Device

Because of the demand for day-old chicks, the incubator machines at the MILLION EGG FARM are started very soon after the beginning of the new year in order to supply the demand from the South, and they continue running until July.

All Hatched. Drying the Chicks in the Chick Trays

Getting Ready to Set

Before the setting of eggs the incubator is cleaned and thoroughly disinfected. Any soiled burlap in the trays is replaced with new, it being the operator's aim to make everything about the machine as clean as possible and thus furnish healthful conditions for the developing embryos. If the incubator to be started is new or has not been used for some time, it is operated with a lighted lamp for three days before the eggs are set. This affords ample opportunity to adjust the thermostat and see that all parts of the machine are working properly. The temperature during this first trial operation is first brought to 103° F., the disk over the lamp heater then being raised one-fourth of an inch and the lamp flame adjusted to reduce the temperature to 102½° F., where it is kept steadily. A hygrometer, also, is used in this trial work, to measure the humidity, which should average 60 per cent.

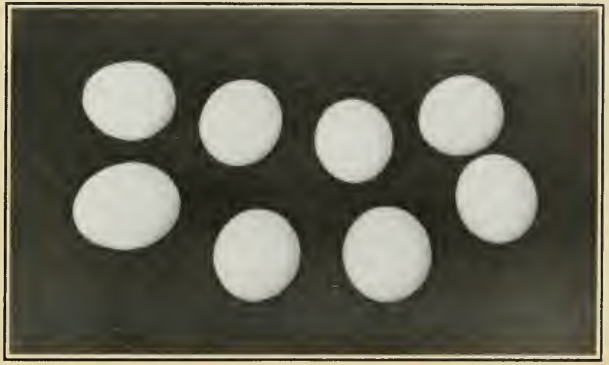
The MILLION EGG FARM recognizes that to operate an incubator basement successfully it must have: first, eggs that will hatch; second, the best possible equipment and conditions; and third, operators who are masters of their branch of the business.

Hatchability of Eggs

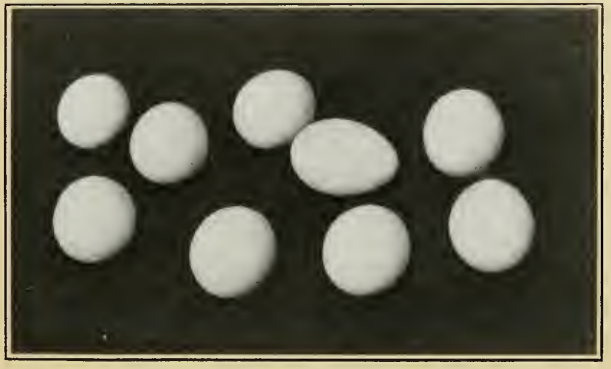
Hatchability of eggs involves several factors, chief of which is the vitality of parent stock. If the male supposed to fertilize the egg germ, or the female that lays the eggs, is sickly or in any way deficient in vitality and ability to perform their natural functions, the eggs will not hatch.

With thoroughbred stock, well nourished, well cared for, and properly mated the most important conditions are fulfilled. At the Rancocas Farm only eggs from stock of such standard, and after the hen has passed her first year's laying, are used for hatching. During a layer's pullet year she lays one-fourth more eggs than in any following year, with the consequence that her vitality is taxed more than when she is laying fewer eggs. A parallel case to this may be found

Misshaped Eggs



Too Round and Small for Setting



Good Eggs, But Shells Are Too Rough to Set

Standard Setting Eggs, Showing Perfect Shape

among cattle, where the presence of tuberculosis has been traced to early incontinence and waste of seed.

From this quality of eggs those selected for incubation are medium in size, and uniform in shape, color, and texture of shell. The continued selection of these qualities in eggs affects future generations accordingly, besides increasing the success of the hatch. The shape of eggs has more to do with their hatchability than the color or texture of shell; for the growing embryo must not be improperly imprisoned. Eggs with smooth shells hatch more readily than eggs with rough shells, which are uneven in thickness. If the eggs are all of the same size there will be no appreciable variation in the amount of heat reaching the imprisoned germs.

The Shape of the Egg Most Important

A hen's eggs are fertile for some days after she has once associated with a male. Fertility is surest in spring and early summer and weakest during the molting period.

Eggs, the shells of which have been washed, are never used for hatching. Washing removes the delicate film over the shell and permits an undesirable evaporation of the moisture within. Care is taken to use only eggs in their natural condition, and to prevent any grease, oil, or other substance from coming in contact with the shells and closing the pores. If the pores are artificially closed, no air can enter and the embryo will die. The small air bubble in each newly laid egg grows larger daily, whether in an incubator or not. If it were pricked the egg would not hatch.

Never Wash a Hatching Egg

Although eggs kept two weeks at a proper temperature and turned daily to prevent the yolk from settling to one side, will hatch, none but newly laid eggs are used at the Rancocas Farm. The rapid evaporation of moisture from an egg is the main reason for setting it as soon after being laid as possible. As soon as a fertile egg is cooled after leaving the hen, the development of the embryo is stopped. That it has the power

Testing Eggs on the Tenth Day of Incubation

to resume development when exposed to the proper heat is one of Nature's wonders; yet the shorter the time this life is kept dormant, the fewer chances of injury or death it experiences.

The Question of Moisture

Correct conditions for incubation are so complex, applying as they do to the undefined thing called life, that the successful operator must study and observe constantly. The men employed to operate incubators at the Rancocas Poultry Farm have studied and practiced for years. Before the self-humidifying incubator machines were used, and after it had been demonstrated that from 55° to 60° F. of humidity was necessary for the best results, water was sprinkled on the floor of the incubator rooms or placed in buckets under the lamps to furnish the desired moisture. This work is now done automatically by the self-humidifying incubators which are used in the place of the old-type machines.

Setting the Eggs

When the eggs have been properly selected they are placed on their small ends, at an angle of about 20 degrees, in the egg trays, and set in the machine. Standing the eggs on end as above described is a valuable factor of which many poultrymen seem neglectful or ignorant. It serves the important purposes of establishing the egg's air cell in its proper place—the large end of the shell—and starting the embryo in a position where it is safest from accidents. A naturally imprisoned chick lies in the shell with its head in the large end.

The First Week's Care

With an adjustment of temperature not over 102½° F., and an average humidity of about 60 per cent., the eggs are incubated the first 7 days. Great care is taken not to overheat the eggs; a temperature of over 103° F. during the first three days is likely to kill some of the germs by causing blood-ring or ruptured capillaries. A reduction of temperature from 102½° F. would be much less disastrous at this stage

Turning and Cooling the Eggs

than an increase. Nature seems to have made provision for this, as is evidenced when a hen leaves her nest for several hours and the eggs are still successfully incubated.

After the first week of incubation the temperature is increased to 103° F., and there maintained until the chicks begin to "pip," that is, to break the shell. After the eleventh day of incubation the chicks themselves generate heat.

When the chicks begin to pip, which is usually 24 hours before the hatch is finished, the temperature in the machine is allowed to vary from 103° to 104½° F. This increased heat outside the eggs incites the chicks to break through to it.

Turning, Airing, and Cooling

The eggs are kept standing on their small ends the first 72 hours they are in the incubators. After this time they are turned twice each day, end for end, in order to lubricate the inside of the shells and keep the chicks from clinging to the inside membrane and becoming crippled.

The photograph shows how this turning is done. The trays are taken out of a few machines at a time and the incubators closed. The front row of eggs is moved to the back of the tray, and a gentle, sweeping motion of the hands turns the eggs. They are then replaced in the machines at once. This is kept up until the first egg in a machine is pipped, when the incubator is closed and under no conditions disturbed until the hatch is finished.

Beginning with the seventh day, and continuing until pipping starts, when the morning turning is done, the eggs are kept out of the incubators long enough to reduce their temperature to about 80° F., or equal to that of a normal man's eye or cheek.

An Operator's Test of Temperature

Two from each tray are held by the operator to his eye, or he rests his cheek on the tray of eggs. When he finds the eggs neither hot nor cold in this test, the trays are returned to the machine. The operators, by practice, have become expert in making these tests. Cooling is done at the morning turning,

One Thousand Baby Chicks

as a closer watch can then be kept upon the returning to normal temperature of the incubator. The cooling of eggs is for the purpose of reducing their temperature below the blood heat of the chicks so that their circulation may be stimulated and their vitality increased. This should not be confused with establishing air cells in the eggs, or with airing them.

Air Is Always on Tap

Airing goes on 24 hours each day. A good machine furnishes a continuous supply of air to the eggs. This is essential to the proper evaporation of moisture from the eggs, and to general sanitary conditions, but principally to furnish oxygen to the growing and breathing embryos. The oxygen reaches the embryo through the porous shell.

The moisture problem is closely connected with that of ventilation. The hygrometer is usually kept at from 55° F. to 60° F., the latter being when the chicks are coming out, so that they may be free from shells or membranes. It may be interesting to note here the curious function of the tiny knob on the bill of the unborn chick. It serves the purpose of rupturing the membrane as the little bird revolves in its shell.

The Care of Lamps

The filling and cleaning of lamps is done in the morning, immediately after the first cooling and turning operation. If the lamps were handled before the eggs were turned, some of the oil might get on the eggs, closing the pores in the shells, and resulting in disaster. The lamps are taken out of their places and put on a corner of each machine. The operator throws up each cap and runs his fingers over the top of the wicks to remove the charred part. A tooth-brush is used to clean the gauze screen and other parts of carbon particles. Smoking is prevented by keeping the gauze free from dirt. The lamp is filled (only the best grade of oil being used) and returned to its place, the flame being adjusted as it was before filling and cleaning the lamp.

Shipping One Thousand Baby Chicks. They Get Fresh Air Through the Muslin

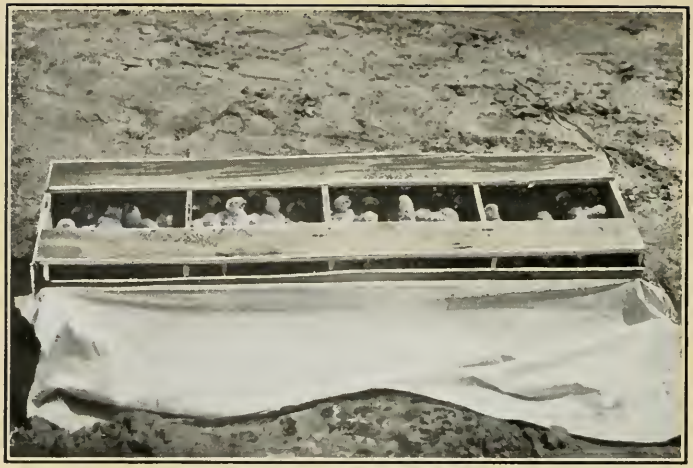
A Tray of Baby Chicks

The generally accepted rule to test each setting of eggs on their seventh and fourteenth days of incubation is not adhered to on the Farm, the testing of 100,000 eggs twice each hatch being expensive in time and labor. Experiments were made to learn whether or not one test would be sufficient. From these experiments it was found that hatching results were practically the same when but one test was taken, between the tenth and fourteenth days of incubation. With eggs averaging less than 90 per cent. fertile, two tests would, of course, be desirable in order to save the clear eggs. Testing is done in a room darkened with curtains, or at night. A tray of eggs to be tested is placed at the left of the operator, and an empty tray at his right, the testing lamp being in front of him. The infertile eggs, which are clear, and the eggs with dead germs, which show black or with the embryos surrounded by a blood-ring, are discarded. The eggs containing live germs are passed to extra trays and returned to the machines.

One Test for Fertility Enough

When the chicks begin to pip, the humidity inside the incubator is raised to 60 per cent. At this stage, in natural incubation, a hen sweats heavily and swells out her feathers, giving added moisture. Much moisture is needed at this time to soften the shells and keep the inside membrane from drying and adhering to the chicks. And while struggling to get out of the shells they consume much oxygen. The door of the machine is never opened at this period. If there are any weaklings or abnormalities no outside help is given them, it being believed that they pay better as fertilizer than as invalids requiring special care and nursing. Some die, therefore. Natural selection—the survival only of the normal, the strongest, the fittest—is clearly in evidence at this time when the individual is trying to enter life's narrow portal. Only the normal in strength and size can rotate in their shells and escape to life.

Pipping



Shipping Box Ready to Tack on the Muslin

Showing Baby Chicks in Shipping Boxes

Hatching begins the twentieth day and is usually over within 24 hours.

The Day-Old Chicks

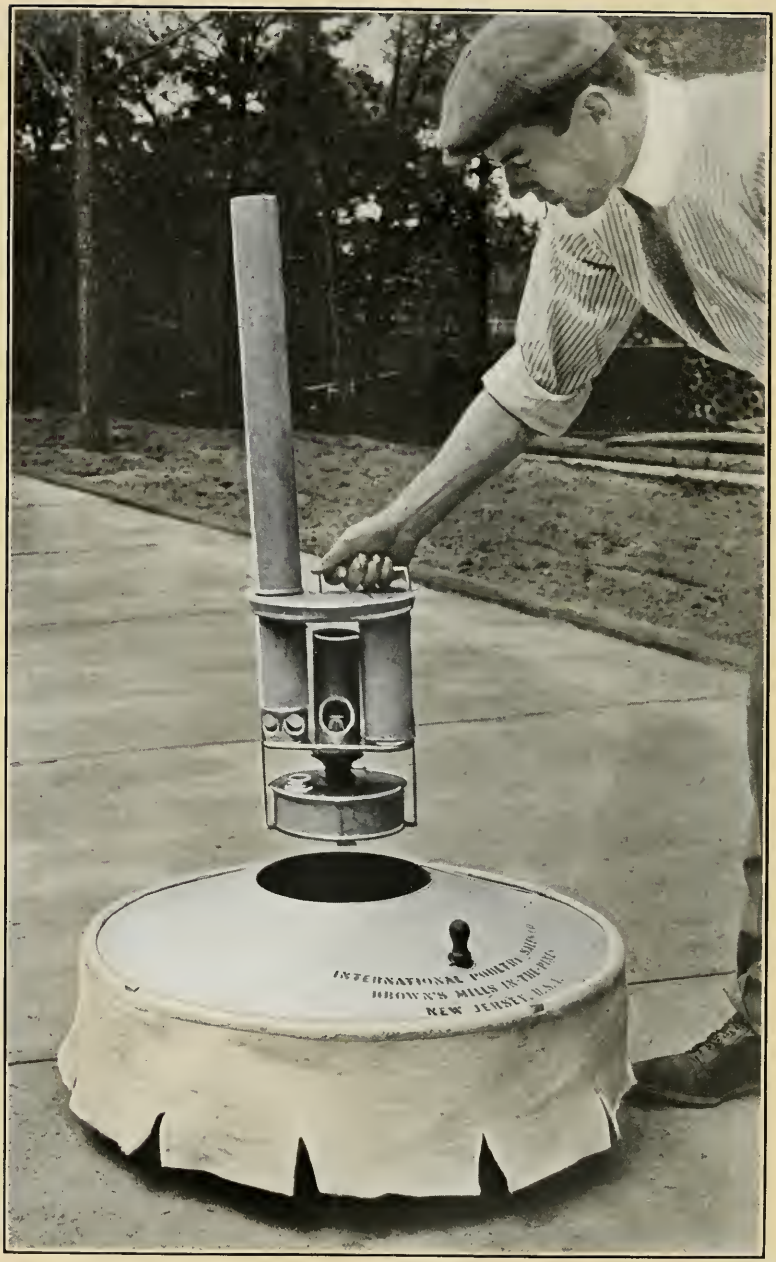
As the newly born chicks gain strength they struggle toward the light and drop from the tray to the nursery at the bottom of the incubators, where they are kept 24 hours, at a temperature of about 95° F., to dry off.

Just before emerging from their shells the chicks absorb what remains of the egg yolk through the navel cord. This supplies them with nourishment that lasts 72 hours. No heavy food is given to them until the end of this time. To this precaution is credited the freedom at this Farm from white diarrhea so prevalent on many plants.

Two Things to Bear in Mind

Two things are regarded as being of great importance at this time—that there be present plenty of moisture to enable the chick to hatch; and that the chick be properly and thoroughly dried after it is hatched. A chick 1 hour old, by reason of the great proportion of water in its composition, weighs more than when it is 6 days old.

When the chicks are taken to the brooder house, or shipped away, the trays are moved from the incubators and placed in the sunlight and fresh air. The burlap is removed and scrubbed with a brush and warm water, and put in the air to dry. The machine is thoroughly cleansed and disinfected and allowed to air 24 hours before being used again.



Lifting the Lamp Out of the Hover, Showing All the Inner Parts

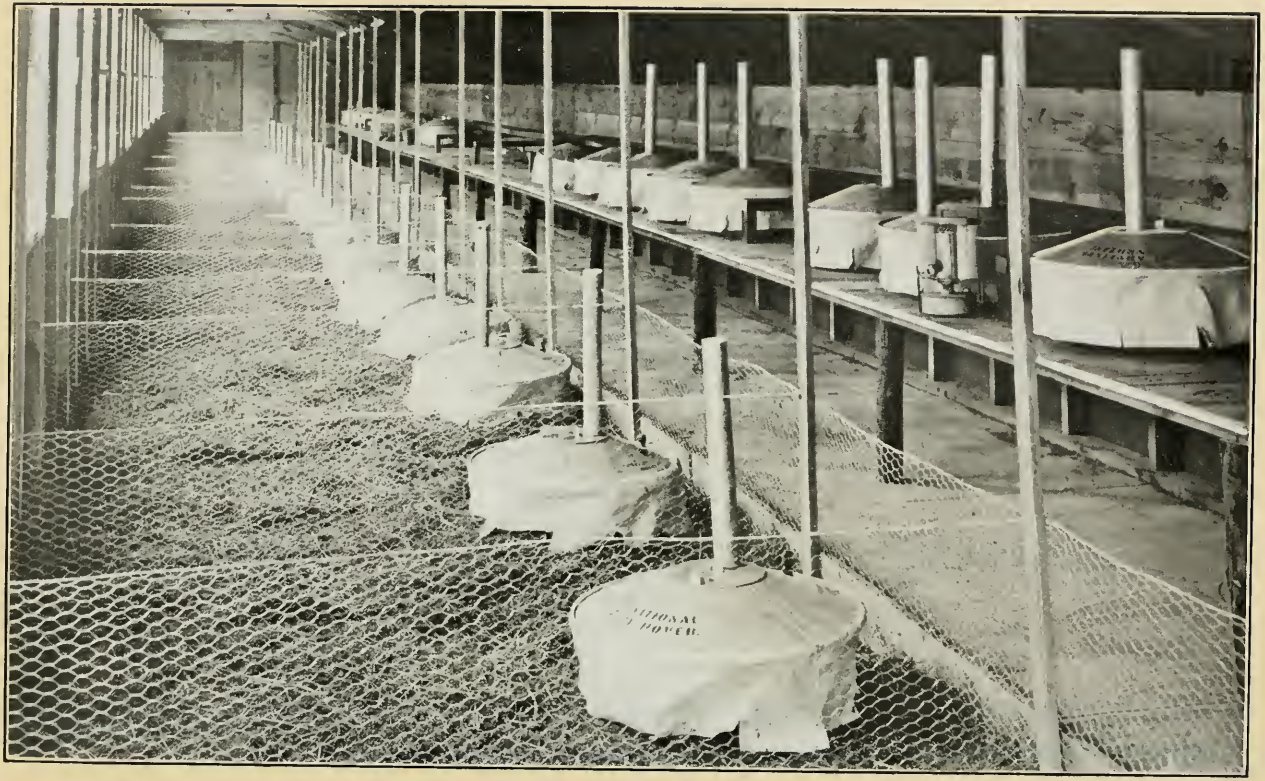
CHAPTER IX

Descriptive of the Brooding System With Movable Hovers

INDOOR brooding systems are indispensable for raising chicks where there is wet weather or a climate in which the temperature falls below 70°. With birds of inherent strength and activity, a good brooding system, and proper feeding, there is little risk of failure in the raising of chicks. But vitality of constitution is most important, for without that no method can succeed. There are no mysteries connected with the raising of chicks. Every chick well-hatched should live and will live, as a rule, if kept dry, at reasonable temperatures, and properly nourished.

Poultry farms in the United States employ various methods of brooding. At the Rancocas Poultry Farm, while two methods are now in operation, the one first employed is being superseded and presently but one system will be employed. The older brooding system is operated in one extensive building divided into nurseries and heated throughout by hot water. The newer system requires no special and expensive brooder house, but permits the use of regular laying houses for the purpose, this saving the cost of erecting and equipping a building that can be used during only the short brooding season.

There Is Really But One System



Equipment of Hovers in a Laying House

The newer method replaces the hot-water system by individual hovers.

In the *Farmers' Bulletin*, No. 357, published *by the United States Department of Agriculture*, the author says:

"Most kinds of brooders keep the chicks comfortable, but the great difficulty lies in the lamps used. The lamp apartments are small and the tendency is for the oil to become warm and form gases that cause the flame to stream up and make trouble."

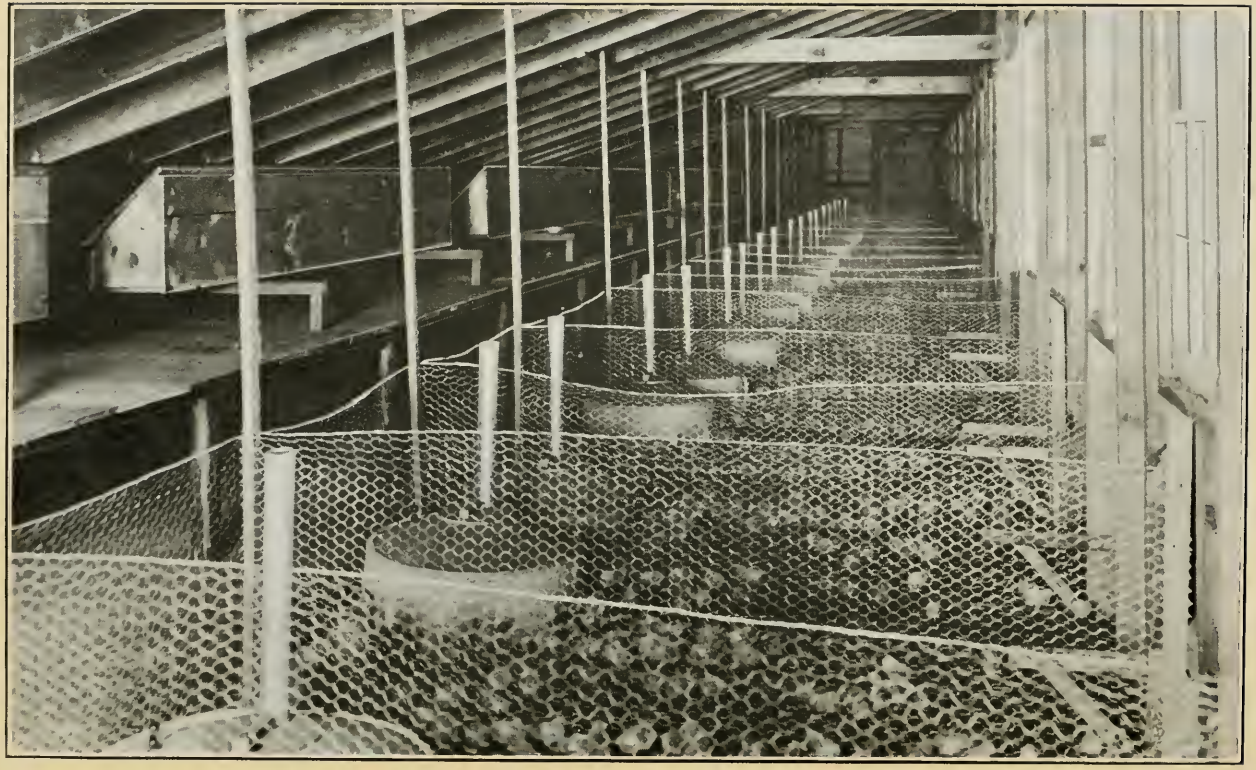
The Hover Is the New Brooder

The owners of the new hover used here have carried out exhaustive experiments to see if the lamp could be made overhot or likely to catch fire or explode. They are emphatic in their statement that these difficulties are now overcome.

The buildings used for the brooding system with the new movable hovers are the standard 100-foot Rancocas laying houses. In preparation for a flock of day-old chicks from the incubators, the movable equipment used for the adult birds is stored out of the way and the house thoroughly cleaned and disinfected. A netting 30 inches high, of 1-inch mesh wire, is placed at the front edge of the roosting platform, between it and the floor. With the exception of space for the operator to walk, the remaining floor is divided by 3-foot wire netting into pens 5 feet wide and 9 feet long.

Room in Laying House for Twenty Pens

As a laying house is 100 feet long, there is room for 20 of these pens. One hover is placed in each pen, at the end nearest the passageway. Also, in each pen, are a 2-quart, 2-piece drinking fountain and a feeding board, 2 feet long and 6 inches wide, with edges projecting up half an inch all around. The floor is covered with an inch of dry sand, on top of which is an inch and a half of fine straw litter. Just outside of the brooder house are runways, or yards, one for each pen and hover. They are 15 feet long and partitioned with wire netting



A Laying House Containing Hovers and Two Thousand Baby Chicks, All Healthy

3 feet high. Fresh air, dryness, and sunlight are no less important for chicks than for layers; and these conditions are equally good in both cases.

Taking Care of 2,000 Chicks in Each House

The chicks are moved from the incubator to the hovers 24 hours after the hatch is completed, between 3 and 4 o'clock in the afternoon. The operation is done necessarily with all care to keep them from being chilled. Each pen with its hover is roomy enough to care for 100 chicks at a time, until the chicks are larger and well feathered, when they are given more liberty. Each laying house, therefore, will hold 2,000 chicks. Temporary boards, 12 inches high, are placed on edge across the pens near the hovers during the first few days of the chicks' life, and moved back a few inches each day to educate the chicks gradually to go to the heat when they need warmth.

When the chicks are 36 hours old, grit is sprinkled on the feeding boards, so that the birds may fill their gizzards with it and have them in good grinding order for the first feeding. They occupy their time running from under the hovers, picking grit, and returning. Four hours later water at a temperature of 70° F. is placed in the fountains.

Their First Meal

At the age of 48 hours the chicks are given their first food—rolled oats, of the common kind, bought in barrel quantities. The rolled oats are sprinkled on the feeding boards in small pinches at intervals of 2 hours during this and the following day. Nothing else is given the chicks because they are still partly nourishing themselves upon the yolk absorbed from the egg just before hatching. The yolk is not entirely absorbed for 4 or 5 days. The avoidance of heavy early feeding, as has been said, is one reason why the Rancocas Poultry Farm is free from white diarrhea. After trying several other first feeds, rolled oats were adopted because they are baked and partly digested before reaching the crop of the chick.

Little Chicks in the Runs. The House is Equipped With Hovers

Beginning with the third day and continuing until the twenty-first day of the chicks' life in the brooder house a chick food, composed of cracked grains such as wheat, oats, corn, millet seed, etc., is given them four times a day instead of rolled oats. Also, during this period they are furnished rolled oats. Also, during this period they are furnished charcoal and grit, together with a sprinkling of sifted beef scrap. The beef scrap and charcoal are mixed in the proportions of 4 to 1. No more is given at a time than they will clean up in 10 or 15 minutes—about a tablespoonful to 100 chicks.

An Early Diet for the Peeps

Beginning with the seventh day about the same quantity of the finest oyster shell is also fed daily. The oyster shell furnishes lime needed for bone growth and prevents leg weakness. On the eighth day the feeding of greens is started; cut clover, Canadian peas, small field corn (cut before it is 12 inches high), lettuce, mow scrapings of clover heads, or any other similar green stuff that is seasonable and procurable. Any chicks that do not show growth and activity are immediately removed, thus maintaining a high average of strength and vigor in the flock. Scrupulous cleanliness observed at this time and at all times, prevents trouble from vermin and sickness.

The first three weeks of a chicken's life constitute its most critical period. If it is vigorous and bright during the fourth week there is but little reason to expect much trouble in the future. This is especially true on the Rancocas Poultry Farm, for nature's plan of "the survival of the fittest" is not balked in any way.

The Critical Period

At the age of three weeks, when they begin to feather on the wings and back, the system of feeding chicks is again changed. Instead of the chick food, mixed grains are given 3 times a day. The feeding of green stuff is kept up as before. The grain mixture is composed of 2 parts of chick cracked

corn, 2 parts of sifted cracked wheat, and 1 part of hulled oats, cracked fine. The oyster shell, charcoal, and beef scrap are continued in quantities increased 50 per cent. If a craving for animal matter manifests itself in toe-picking, or otherwise, the amount of beef scrap is increased still more.

Separating Pullets from Cockerels

As soon as the chicks are grown so that their sex may be determined, the males are put by themselves in one end of the house. This is because it is desirable at this time to make a difference in their rations, and to keep them from annoying the young pullets. To the pullets, a wet mash is fed once a day. It is made up of the following:

1½ parts bran
1 part wheat middlings
1 part corn meal
1 part steamed clover
1 part beef scrap
¼ part fine oyster shell
¼ part linseed meal

It is made wet enough to be crumbly, but not mushy.

To the cockerels, in addition to the grain mixture of corn, wheat, and oats, the wet mash is given, with more corn meal. Besides this increase of corn meal, the last feed of the day to the cockerels is of corn alone. The beef scrap is fed in smaller quantities.

Where the Extra Cockerels Go

The cockerels not saved for breeding should be disposed of as broilers as soon as possible. Under this system they are fat and ready for market in 10 weeks, weighing a pound or more each. The pullets are held on the hard ration to develop their powers of digestion and assimilation, that they may be in the best possible form to fulfil their destiny as good layers and breeders. As the pullets and the cockerels grow larger, whole wheat, oats, and corn are used in place of the finer wheat, oats, and corn, and the rations maintained otherwise unchanged.

When the sexes are separated, the pens and runways are removed, the hovers are stored, and the pullets have the run of the floor and yards. The males being fattened for broilers are kept in their third of the house until marketed. The system of colonizing starts with 2,000 chicks in one house. The number of pullets over 500 or 600 raised, together with the surplus cockerels not marketed, are removed to other houses. The remaining birds stay in their original colony.

The care of the chicks, besides feeding and hovering, must take account of the surrounding temperature. When chicks in the incubators drop from the hatching trays to the nursery below they find the temperature about 95° F. They are brought from the incubators to the hovers into a heat of from 92° to 90° F., which is maintained the first 2 weeks. No arbitrary rule is adhered to, as the heat temperature is governed by the action of the chicks and not by the mercury in the thermometer.

Brooding House Temperature

If the chicks crowd to the outside of the hover, panting and breathing hard, it is an indication of too much heat; if they huddle and crowd about the hover they need more heat. The natural way of applying warmth to chicks is on their backs. In artificial brooding, therefore, the heat is supplied from overhead. Experience teaches that bottom heat leads to leg weakness. When the chicks run from and to the hover, and at night-time spread themselves comfortably under the edge of the hover, with their heads out, it is a safe indication of the right temperature. Too much heat is more detrimental than not enough.

When the weather is favorable, chicks 6 days old are let into the outside runs, where they enjoy scratching.

After 2 weeks the temperature of the hovers is run between 90° and 88° F., until the checks are 4 weeks old. Then it is maintained between 86° and 84° F., for 2 weeks, after which it is reduced to 82° F. and kept there until the birds no longer need artificial heat. When the chicks are from

Taking a Sand Bath

6 to 8 weeks old, depending on their development and weather conditions, they no longer need hovers. An outdoor temperature of about 70° F. seems to be about right for birds after they leave the nursery.

Pure, fresh air is as essential as warmth. This is supplied in connection with the heating system, the hover creating a constant gentle circulation. Cleanliness in the pens, the hovers, the drinking fountains, and the feeding boards is strictly observed. Incubator chicks are free from lice and will remain so a long time if kept in clean surroundings.

They Must Have Pure Air and Be Kept Clean

Before the young birds have learned to roost on perches they lie down flat on the straw-covered floor. Straw is piled high in the corners of the room to prevent crowding. When they are far enough developed to roost on the perches it is easy to teach them the way. When closing the houses at night, a few chicks are placed on the perches and in a short time the entire flock roosts there.

Colonizing in Large Flocks After the Heat Is Removed

The natural occurrence of surplus male birds in every hatch makes it necessary for the Million Egg Farm to market the cockerels as soon as possible.

The first cockerels are killed and sold as squab broilers when they weigh about 1½ pounds a pair. These are in great demand by epicures. From this time on during the summer, when the male bird approximates 5 pounds, they are killed and sold as the market warrants. In boxing them for shipment a quantity of ice, sufficient to last 2 or 3 days, is included.

As particularly fine-pointed males develop they are selected and saved for breeding purposes. A thousand of these cockerels in one house makes a sight worth traveling far to see. Each one is a model rooster—a miniature reproduction of the full-sized bird.

The Administration Building

CHAPTER X

Executive Building of the Rancocas Poultry Farm—A Glimpse of a Model Structure

THIS building is used for the offices of the International Poultry Sales Company, and for the feed-storage and incubator rooms and machinery of the MILLION EGG FARM. It is the largest and most expensive structure on any poultry plant in the world, costing for construction and equipment the sum of $50,000.

Fireproof Wisdom

It is of approved fireproof character throughout. A fire destroying the MILLION EGG FARM'S incubator rooms would cause a loss of thousands of dollars by interrupting a season's hatching. Another consideration in favor of fireproof construction is the low cost of insurance.

An item of great importance in any business is cost of supplies. By having large storage room this farm can accumulate its grain for feeding when prices are lowest. With 20,000 fowls to feed, a 10 per cent. saving in the cost of grain will pay for the building in ten years. As it is located in the heart of the plant it makes possible also a saving in the labor of handling, mixing, and distributing the feed. Furthermore, the executive and clerical staffs of the business, and needful supplies of all kinds, find excellent accommodation in its spacious rooms. These considerations and advan-

tages make the high quality and large extent of this building an economy and not an extravagance.

Its Architecture

The total length of the building is 160 feet, divided into what is called the *Main Building*, 125 feet long, and the *western end*, 35 feet long. The main building is 26 feet wide, and two stories over a basement in height.

The structure is heated with hot water and ventilated in the most approved manner. A sanitary plumbing system that meets all requirements is in operation. The building, as well as the entire plant, is supplied with water from a spring-fed reservoir 1,000 feet away.

The basement walls are of concrete and the exterior walls of a high grade of brickwork, coped with stone. The floor and roof systems are of reinforced concrete and all communicating stairways and doorways are of standard metal construction. From a pole on the turret of the western end floats the flag of the company. A mammoth chanticleer surmounts the façade over the office entrance.

The Incubator Basement

The basement under the main building is used entirely for incubation. In addition to this capacity there is at the left end a continuation 109 feet long and 27 feet wide, running toward the north, at a right angle to the main building. This part of the incubator basement is covered by a concrete roof only. Thus, room is supplied to set 100,000 eggs at once. During the previous hatching season there was an incubator capacity on the Farm of 32,000 eggs, but orders for day-old chicks were returned unfilled as early in the season as April, making this enlargement necessary. The knowledge regarding desirable incubating conditions acquired in operating the three cellars used previously has been put to good use in designing this incubator room.

The basement of the western end is separated from the incubator basement by a thick wall and metal doors. In it is a gasoline engine to pump water for the elevator and to

the tank on the fourth floor; and a larger gasoline engine to operate the machinery. This larger engine is so arranged that it can be used to pump water when the smaller engine is not working. Also, in this basement is a boiler to furnish hot-water heating for the building. Near the exit is an air-tight bin that holds, until it is removed in wagons, the litter made from cutting straw, etc. A carpenter's bench, table-saw, lathe, anvil, blacksmith's forge, grindstone, and other tools complete the equipment of the engine room.

The Engine Room

A large elevator for passengers and freight runs from the basement of the western end to the roof. This makes it easy to move feed, etc. to the proper floors.

On the first floor of the western end is placed the belt-driven machinery for cutting litter used in packing eggs and for chopping the green stuff fed each day. Here also is the wet-mash mixing machine and a 100-gallon copper boiling kettle for steaming the clover or alfalfa used in the morning mash.

Cutting Machine

Around the sides of this room are bins containing the mixed and unmixed grains, from which the feeders take the rations fed to the chickens daily.

There are separate bins for wheat, barley, hulled oats, and cracked corn; and for the mixtures of wheat and barley, wheat and hulled oats, wheat and cracked corn, and barley and hulled oats. Other bins hold the proportionate mixtures used for the mash feeds. The buckets used by the feeders are here kept on racks.

Outside of the western end of the building, on a level with the first floor, is a loading platform equipped with a mechanical hoist. Supplies are received here and taken to the elevator. Under the platform coal is stored. In front of the loading platform is a platform scale for weighing supplies.

Loading Platform and Scales

The second floor of this western end houses a belt-driven mixing machine, in which all the grains and dry mashes to be mixed are prepared and delivered through chutes to the proper bins below. Here also feed is stored in bags, such as middlings, bran, linseed, ground oats, corn meal, etc.

A Water-Tank Room

The third floor above the basement of the western end encloses a water tank of 6,000 gallons capacity. This cannot freeze and it supplies water for various uses throughout the Farm. The remainder of the space in this room is occupied by empty egg cases and other stock materials that should be protected from the outside weather.

Executive and Clerical Offices

At the eastern end of the main building, on the first floor, are the quarters for the officers, clerks, and stenographers of the company. The entrance is a lobby opening to the bookkeeping department. At the right of the lobby is the President's office, furnished in quartered oak. The Secretary and Treasurer have a room in the northeastern corner. These rooms are equipped with all necessary conveniences, such as file cases, desks, telephones, and lavatories.

Display and Storage Room

The extensive first-floor space between the office quarters and the western end is arranged and used for the storage in bags of food supplies not requiring to be mixed; for the display of all the products dealt in by the Company, such as incubators, brooders, hovers, and prepared foods; and also for egg grading and sorting. A dark room for testing and candling market and hatching eggs—to avoid selling any with blood spots, etc.—is here provided. Also, there is a sink for washing soiled eggs before they are sent to market.

In one corner is a locker, shower bath, and washroom for the men employed on the Farm. The foreman of the plant has his office, equipped with a desk and recording facilities, on this floor.

Grain Storage Quarters

The second floor of the main building is used entirely for the storage of grain in large bulk. It is furnished with an overhead carrying system that reaches from the elevator shaft to the other end of the building and, by switches, to the various grain bins. There are 40 bins in this room, holding 8,000 to 10,000 bushels of grain, according to the weight of the different kinds of feed. Chutes lead from these bins to the mixing hoppers on the floor below.

Peace and Contentment While Feeding

CHAPTER XI

Concerning Profits Realized on the Rancocas Poultry Farm for the Season of 1910

HOWEVER interested the reader may have been in the history, methods, and products of the Rancocas Farm, there may still lurk in his mind a doubt concerning the reliability of the figures and a question about the actual financial profit of such a vast and elaborate experiment. A tree must be judged by its fruits, and a business by its profits. Unless the large expenditure of time and money has brought an adequate return the enterprise will have no interest for the majority of men. Happily I am in a position to furnish accurate and authenticated figures on every part of the business. The books of the Rancocas Poultry Farm have been examined and audited by the well-known and reliable firm of public accountants, Messrs. Lybrand, Ross Brothers, & Montgomery, Land Title Building, Philadelphia, Pa., and their names guarantee every financial item given in this volume. To the best of my knowledge and belief this is the only poultry book that has ever been published which gives an authenticated statement of actual costs and profits.

In the majority of poultry books the estimates of costs and the statement of profits are not at all trustworthy. The writers place the wages of their help much too low in order

to show a profit. The average wage paid on the Rancocas Poultry Farm is over $50 a month. I consider that the successful operation of the plant depends upon the responsibility of the men and the interest which they take in their respective departments. We cannot hire the kind of help we require for $20 or $25 a month. $250 a month is charged for my services alone and $100 a month is paid to the foreman. Members of the office force are paid practically city wages, as competent help in these departments is absolutely essential.

Good Feed Wasted by Poor Feeders

Failure in the poultry business has been frequently ascribed to the high cost of feeding. The greatest expense we have on this plant is not the feeding, but the general costs, such as wages and incidental sundries. It is likely that on some plants the trouble is not so much that the feed is too high, but that good feed is fed to the birds with poor judgment by the feeders, thus wasting the profits aimed at. We feed our birds high-priced grains by high-priced feeders,and the result is that we obtain large returns in the way of eggs, rapid maturity, and the maintenance of a high standard of health.

Good Market and Good Service

It should be understood at the outset that in order to make a poultry plant pay there are other matters of importance which enter into the general proposition besides that of raising chickens, although necessarily that is the prime essential. Two only need be mentioned, viz.: the necessity of securing an accessible and profitable market for your product; and also the need of giving your customers satisfactory service.

Another item of importance is your method of advertising and the cost of procuring customers.

The purchase of the best feed at economical prices is another factor. There is no poultry farm, whether large or small, which cannot make some satisfactory arrangement with the large feed houses to secure a certain discount by which the farm can add to its profits.

Insurance

Insurance is one of the best assets in which a poultry man can invest. We carry not less than $60,000 in the most responsible companies doing business in New Jersey, insuring our houses, stock, and general equipment all through the plant.

Of course, interest on the investment, as well as depreciation, is charged off each year.

Record of Each Egg

Each feeder on the farm is supplied with printed egg slips, showing the number of houses under his care. When he makes the first pick-up in the afternoon he puts down the exact number of eggs collected from each house in the proper column, and totals it; and again in the evening when the final pick-up takes place. He then adds the two columns together and turns his slip in to the foreman, who, in turn, makes a duplicate of the slips and gives the office a summary of egg product for that day.

In addition to noting upon these slips the number of eggs gathered, the feeder also enters such comments as may be necessary—deaths (if any), general condition of the birds, and any suggestions that may occur to him. Of these the foreman makes a summary and sends it to the office where it awaits my action. Anything requiring attention is approved and sent back to the foreman, who, in turn, notifies the feeder of the changes that may have been authorized.

A Tab on Every Bird

We adhere so strictly to this method that it may be said that not a bird is allowed to take a strange or new step without its being first passed upon at headquarters. The clerk in the egg room receives a copy of the number of eggs collected each day, and checks it up, and sends to the foreman a report regarding the number of eggs shipped, and the number left on hand, first sorting the hatching eggs from the market eggs, and keeping a separate account of each.

Advertising, as said before, is one of the main factors in the business, and it seems to be a special gift to word the pub-

Sticking

licity material in such a way as to reach the individual poultry man sought for and, likewise, to select only such publications as will bring the best results. We "key" every paper in which we advertise, which enables us to credit each with the number of inquiries received and the orders resulting therefrom.

Advertising

The method of disposing of your eggs at the highest market price is one of the cardinal things that will determine what your profits will be at the end of the season or year. We are the largest shippers of strictly fresh eggs to New York City and have no trouble to secure proper parties to handle them. We have tried catering to the hotel trade; but, as a rule, hotels are so dilatory, and their claims for breakage so exacting, and the custom of paying the steward extra fees in order to keep him in good humor is so unsatisfactory (all of which takes time and expense, even though we might be able to get a premium above the market price) that we have turned away from this class of trade entirely.

Good Market

The selling of fresh eggs to retail stores is a very satisfactory method of disposing of your eggs, provided you are able to do your business with responsible parties.

Owing to the excellent quality of our eggs we have established in New York City a demand for them. They are taken by one or two jobbers who buy them from our commission merchant, and we find it more satisfactory to deal entirely with one commission house in New York that is able to dispose of the whole output of the Rancocas Poultry Farm at as good prices in the long run as might be obtained if we sold to hotels, restaurants, and private customers. Because the customers of the commission merchant have learned that Rancocas eggs are strictly fresh, and the quality uniform, the dealer has no difficulty whatever in disposing of the eggs—the demand, in fact, is far in excess of the supply.

Returns for the sale of eggs are made to us daily, and we pay the merchant only 5 per cent. commission. There is also

Roughing and Pin-Feathering

a considerable saving in the bookkeeping department, owing to the fact that we have prompt returns and no losses on bad accounts. Shipping only to one firm pays us better than if we were to distribute our eggs to different parties, even though we might do so at premium prices.

Quick Returns

No doubt a great many shippers of fancy eggs have been "taken into camp" by unscrupulous commission merchants, but you will be able to find a large number of reliable firms which have been in the business for many years, and who are as responsible and trustworthy as merchants in any other line of trade.

The irresponsible dealer is generally found among the lower class of merchants who enter into the commission business for a limited time only for the purpose of defrauding shippers whose names they secure by following up express wagons, then soliciting their trade by offering from 2 to 4 cents above the prices others are paying. For a while, after they have secured such trade, they make prompt payments, gradually becoming lax, and finally closing up entirely, whereupon the shipper is out of pocket.

This is one of the reasons why we prefer to do all of our business with one responsible firm of undoubted character, rather than with a number of houses.

The question may be asked whether it is wiser to ship broilers alive or dressed. Our early broilers, when the market price for them is from 50 to 60 cents a pound, we ship dressed; but as the season only lasts about 6 weeks of the year we prefer to ship the larger portion of our broilers (about three-fourths of them) to market alive.

Live or Dressed Broilers

Below follows the statement of the business done by the Rancocas Poultry Farm for the season of 1910, commencing August 1, 1909, and ending July 31, 1910, as issued by the firm of Lybrand, Ross Brothers, & Montgomery, Public Accountants, Land Title Building, Philadelphia, Pa.:

INCOME AND EXPENSES FOR THE YEAR ENDING JULY 31, 1910

Income:		
Sales of market eggs		$12,721.36
Sales of hatching eggs		5,103.62
Sales of broilers		200.00
Sales of live birds		3,208.34
Sales of day-old chicks		6,446.50
		$27,679.82
Expenses:		
Advertising		$ 992.81
Feeds of all kinds, viz.:		
Payments during year	$ 9,129.94	
Add, unpaid bills July 31, 1910, less estimated feed on hand	1,000.00	
	$10,129.94	
Less unpaid bills August 1, 1909, included in above payments, less feed on hand (estimated)	2,585.95	
		$ 7,543.99
Expenses		16,159.19
		$24,695.99
Excess of cash income above expenses		$2,983.83
Value of pullets and cockerels on hand at end of year in addition to stock of August 1, 1909, viz.:		
11,500 pullets, at $1.00	$11,500.00	
2,599 cockerels, at $2.25	5,847.75	
	$17,347.75	
Less allowance for birds sold (old stock), lost by death, etc.:		
Hens and pullets, 723 at $1.00. $723.00		
Roosters and cockerels, 55 at $2.25 123.75	846.75	
		16,501.00
Total profit, not including broilers on hand		$19,484.83

Average laying stock, 7,000 hens.
Average profit per hen, $2.78

The net profits divided by 7,000 laying hens show a profit of $2.78 per hen.

It should be borne in mind that our statement shows the actual earnings of 7,000 birds after deducting the cost of hiring sufficient help to take care of practically 30,000 birds on the plant at the present time—stock that will give us about 20,000 layers at the beginning of the new season. The statement thus shows that we have earned a profit of better than 19 per cent. on our investment with only 7,000 layers. It is well to note that we are coming into next season with nearly three times as many layers, and our expense for help will not increase because we have already a sufficient number of men to take care of the increased number of birds; and the increase in the amount of feed that will be required will not be over 10 per cent. of the amount the birds are now consuming, so that we shall be able to show a profit of 50 per cent. or better this coming year.

Let us add finally that we have not aimed in the preceding pages to show what it will cost to feed each individual bird, owing to the amount of bookkeeping that would be required in order to do so, but in the following chapter, written for beginners, we do specify what it will cost to take care of a certain number of fowls.

A Glimpse of the Farm

CHAPTER XII

Rancocas Poultry Farm Methods Laid Out for Beginners on Small Farms

THE question that must have arisen in the minds of many readers, is: "How can I, with small capital and little experience to invest at the start, adapt the Rancocas Poultry Farm methods to my own circumstances?"

To answer this question, carefully worked out plans are given herewith. These plans are not new and untried, for more than a score of poultry men have put them into practice during the last two years, with uniform success.

When good methods of egg farming fail, it is because they are not understood and backed by sufficient effort and capital to stand the strain of paying "dumb tax." Almost all egg farmers get a good profit today. This was not the case a few years ago, because of crude methods and ideas. But there is a wide difference between the margins of profit various poultry men earn. To be thoroughly successful is to get the greatest possible percentage of profit. This means having the best stock and using the best system and methods. These plans and estimates are based on Rancocas standards of stock, equipment, and methods.

In none of the plans is the cost of land figured, it being assumed that the beginner already owns some property. To

the man or woman with less than $100 to invest no special plan is given, for in such cases it is easy to deduce from the other plans.

For the person with some spare time and $500 to invest in the egg-farming business, and an income to meet his personal needs for a time, we give a plan of the building and other equipment required, and the results he should have in a year.

The person with $1,000 to invest, and $500 additional for living expenses, is dealt with next.

The man or woman who wants to install and equip a $2,500 plant, and has $500 to live on, is then considered.

To those able to start with an investment of over $5,000 no better plan can be suggested than that actually worked by the MILLION EGG FARM. An investment of $5,000 or more ought to bring its owner much greater profit than it did in the early days of the Rancocas Poultry Farm, for expensive lessons have been learned and paid for in the mistakes and experiments there made.

What You Can Do With $500

With $500 to invest and an ordinary amount of spare time to give to the egg-farming avocation, you can earn a dividend of 65 per cent. for yourself the first season. A plot of ground of about half an acre in extent is needed. The first expenditures are for the chicken house and equipment. If built according to the plans and specifications herewith given the house will cost $300.

Concrete

All concrete is to be made in the proportion of 1 part cement to 6 parts clean sharp gravel. Foundation walls to be 6 inches thick. The ground, if sand, is to be leveled off over the entire floor area of the building and covered with a damp-proof layer of two-ply tar paper over which is to be laid a concrete floor 2½ inches thick and at such a level that the surface of the floor will be 1 inch below the top of the wood sill. (In case the building is to be erected on a soil other than sand or gravel, the foundation wall should extend below frost level and the floor space

be prepared to receive the concrete and damp-proofing by excavating the soil and then filling in with 8 inches of cinders, or gravel.)

Lumber

The framing timber and sheathing are to be hemlock. Sills 2 inches by 6 inches; studding 2 inches by 4 inches; plate 2 inches by 4 inches; rafters 2 inches by 6 inches spaced 2 feet on centers. Perches 2 inches by 3 inches. Siding is to be of white pine or cedar with a lap of at least 1 inch. Doors to be made of 1-inch tongued-and-grooved white pine boards with an 8-inch face, well battened and braced. The dropping board is to be of 1-inch tongued-and-grooved yellow pine boards secret-nailed. One thickness of two-ply tar paper is to be placed under the siding on the north wall of the building. The wall behind the perches from dropping board to roof is to be sheathed with tongued-and-grooved boards. The sills are to be secured to the foundation walls by 12-inch bolts, built into the wall during its construction.

Wire Screens

Wire screens are to be put over the bottom sash of all windows and over all the muslin screen openings. The screens are to be hinged where so noted on drawings.

Roofing

The roof sheathing is to be covered with heavy two-ply roofing felt, well lapped and securely nailed, and mopped with pitch. Over this is to be spread a heavy coating of pitch and slag.

Eight feet at one end of this house is designed for a feed storage room. Arranging the remainder upon a proportionate scale, constructing pens, and furnishing it with hovers, as described under the heading "Brooder System with Movable Hovers," on the foregoing pages, you will be able to install 500 April-hatched chicks.

These chicks, at 13½ cents each, plus expressage of $2 for the lot, will cost $69.50. Five hovers, five drinking fountains, a spraying pump, shovels, feed buckets, etc., can be bought for about $58.

Eighty per cent. of the chicks should survive and be healthy when they are 3 months old. This will give you, in July, a flock of 200 pullets and 200 cockerels. Selling 190 of the cockerels for broilers and reserving 10 for mating purposes, leaves you 210 birds to be cared for in the 788 square feet of floor space in the house—(588 square feet of floor; 168 square feet of platform; and 32 square feet of nests).

A Close Calculation

This is a little more than 3½ square feet of space for each fowl. Selling the surplus cockerels at this time not only gives you more room, but cuts the feed bill, and brings your first income. At this age the cockerels will bring about 30 cents each, or $57 in all.

The cost of feed, oil, litter, etc., for rearing the 400 birds to the age of 3 months is 6 cents each a month, or a total of $72.

Cost: 6 Cents a Bird a Month

After the first of July, the 210 remaining birds, with their increased size, will cost 10 cents each a month to feed. By October these April-hatched pullets should be laying well. They will not molt or stop laying until the last of the following August, by which time the flock will have averaged 144 eggs a pullet for the 12 months, or 12 eggs a month. This is a low average for the Rancocas strain of S. C. white Leghorns, when they are kept in so small a flock. An average market price of 3 cents an egg yields 36 cents a pullet each month, or $72 for the flock. The cost of feeding for the month is $21. There is a profit, therefore, of $51 a month for 12 months, over the cost of feeding.

Meat Profit of 60 Cents a Bird

Marketing the 210 birds in August, at which time they will bring the highest prices, after the pullets stop laying will give a meat profit of 60 cents each, or $126. In the following statement, the business is debited with the cost of insuring the building, equipment, and the stock and with interest on the investment of $500.

The estimates upon which the statement is based are conservative throughout. While the percentage of profit is figured on the total of the season's expenses, the actual greatest amount invested at one time is only $502.50. By building up a private trade there is no doubt you could get an average yearly price of 4 cents, or more, an egg, which would add $172.80 to your earnings. Also, there are possibilities of selling some of the surplus cockerels for much more than 30 cents each; of selling, moreover, hatching eggs instead of market eggs—and so on indefinitely. No one following the methods outlined in this book will fail to get a good profit the first year and a larger profit the next year.

APRIL, MAY, JUNE

Debit		*Credit*	
House and yarding	$300.00		
500 day-old chicks, at 13½ cents	67.50		
Expressage on chicks	2.00		
5 hovers, at $8.00	40.00		
5 drinking fountains, at 40 cents	2.00		
Spraying pump, shovel, bucket	10.00		
Feed, 400 chicks, 3 months, at 6 cents per month	72.00		
Interest and insurance, 3 months	9.00		
Total	$502.50		

JULY TO AUGUST NEXT YEAR, 14 MONTHS

Feed, 210 birds, 14 months at 10 cents	$294.00	190 cockerels, at 30 cents	$ 57.00
Interest and insurance, at $3.00 per month	42.00	28,800 eggs (200 pullets 144 eggs each)	864.00
		210 birds marketed at 60 cents	126.00
Total expenses	$838.50	Total receipts	$1,047.00

Summary at End of Season	
Total cash receipts	$1,047.00
Total cash expense	838.50
Cash on hand	$208.50
House and equipment (less 5% depreciation)	334.40
Total assets of business	$542.90
Profit	65%

Repeating this business the next season, beginning the following April, you would need a cash capital of only $175, and that only the first 6 months. Your cash receipts would be $1,047 as before, but your expenses only $497 (including $10.50 interest and insurance on the building the 7 months it contains no chickens), leaving you with $550 cash and your house and equipment (now valued at $317), when your birds are sold for meat. The percentage of profit on this second season's business is 180 per cent. The third, fourth, fifth, etc. seasons worked on this plan would each give the same profit as the second.

By putting part of this cash profit of the second season into additional building and equipment there would be room to care for the second instalment of young chickens at the same time the pullets are laying, thus avoiding the idleness of 7 months after the previous flock's season is over. For instance, starting in business with day-old chicks, in April, 1911, you would have eggs in October, and in the following 11 months, which brings the time up to September, 1912, when the flock shall be marketed. Then, unless you had additional room and had started with another flock in April, 5 months previously, you would have no room for the new flock until after the September killing. And this means waiting from September, 1912, to April, 1913, for the next proper starting season. Therefore, by using part of your second season's earnings to increase your plant you can make each subsequent season overlap the previous season; and do a business every 12 months that, including the 7 months

between the time of killing (September) and the time of starting with a new flock (April), otherwise would consume 24 months. Your profits then would be $550 every 12 months instead of every season.

Suppose You Incubate

Instead of starting in business with day-old chicks, you can start with an incubator and eggs. A 400-egg capacity machine costs $38 and hatching eggs 7 cents each. By setting the machine twice you would, very conservatively estimated, get 500 chicks from the 800 eggs. The cost of 800 hatching eggs is $56. The cost of oil for heating the machine is half a cent an egg, or $4 for the two hatches. To get the chicks in hand there would be an investment, therefore, of $98 the first year instead of $69.50 for which the chicks could be bought. Also, 6 weeks' time would be consumed, in addition to the slightly increased interest and insurance charges.

The advantages in the long run of starting with an incubator are greater than the disadvantages, in that while you have the initial expense of $38 for the machine, it is but once and you are independent of others for chicks, being in a position even to sell some chicks at 13½ cents each, instead of the eggs at 3 cents.

You Have the Yearling Layers

Also, by enlarging the plant after the first season—whether starting with day-old chicks, or with hatching eggs—instead of marketing all the birds at the end of their pullet year, two-thirds of them will be worth selecting and holding over as yearling layers. These may be depended on to yield 120 eggs each, a year. The additional cost of keeping over these 130 yearlings will be but 10 cents each a month, during the 3 months of their molt. Thus a saving in the cost of day-old chicks, or hatching eggs, and in the expense of the first 3 months' rearing will be effected. The eggs from the yearling hens will be worth 50 per cent. more for hatching than those from pullets.

What You Can Do With $1,000

With $1,000 to invest in the egg-farming business, and $500 additional for living expenses the first season, you can earn 81 per cent. in return for your labor and the use of your capital. About an acre of ground is needed; and a chicken house, according to previous specifications and the following plan.

This 85-foot house contains a 10-foot feed room and floor space enough for 400 adult birds. Starting with 1,000 day-old chicks at 13 cents each, in 10 pens, each equipped with movable hovers, etc., there would be expense of $228, as shown by the following account. Raising 80 per cent. of the chicks to the age of 3 months would give you 400 pullets and 400 cockerels, at a further cost of $144 for feed (6 cents each, a month). Interest and insurance for the three months would amount to $15. Selling 380 of the cockerels would bring $114 and leave you a flock of 400 pullets and 20 cockerels to grow to full maturity and remain 14 months longer in the house, at a monthly expense of 10 cents each for feed, or a total of $558. By the end of the 14 months, these 400 pullets will have laid during 12 months 144 eggs each. At 3 cents apiece the income from eggs would be $1,728. Marketing the flock at the end of this season would return $252.

Including interest and insurance at the rate of $5 a month, the first season's business will have cost you $1,445; and you will have taken in $2,094, leaving you cash in hand to the amount of $649 and a building and equipment valued at $470.

April, May, June

Debit		*Credit*	
House and yarding.....	$400.00		
1,000 day-old chicks, at 13 cents.....	130.00		
Express on day-old chicks	4.00		
10 hovers, at $8.00.....	80.00		
10 drinking fountains, at 40 cents.....	4.00		
Spraying pump, shovel, bucket, etc.....	10.00		
Feed 800 chicks, 3 months, at 18 cents.....	144.00		
Interest and insurance, 3 months.....	15.00		
Total	$787.00		

July Through Second Following August

Feed, 420 birds, 14 months, at 10 cents...	$588.00	380 cockerels, at 30 cents	$ 114.00
Interest and insurance 14 months. at $5.00 a month.....	70.00	57,600 eggs (400 pullets, 144 eggs each).....	1,728.00
		420 birds marketed, at 60 cents.....	252.00
Total expenses.....	$1,445.00	Total receipts	$2,094.00

Summary at End of Season

Total cash receipts.....	$2,094.00
Total expenses.....	1,445.00
Cash in hand.....	649.00
House and equipment (less 5% depreciation)...	470.00
	$1,119.00
Profit.....	78%

While your total expense for the season is $1,445, yet the greatest amount invested any month is less than $800. Figuring your time worth $60 a month you would have a personal credit of $1,020 for the season of 17 months. But only a fraction of your time can fairly be charged against

your chicken business because there will be many hours each day that you can devote to gardening and the care of your home. Sixty dollars a month for living on a farm such as this would be, is equivalent to a $90-a-month living in a city.

For the second season you would need in the business less than $400 cash. Your receipts would be the same as before and your expenses only $951, leaving a profit of $1,143 cash and the house and equipment valued at $447, which is 167 per cent. gain at the end of the second season. Following seasons would be the same. For the reasons, therefore, as explained in the case of the man with $500 in hand, it would be wise for you to invest in additional buildings and equipment part of the cash yielded at the end of the second season. Your profits would be, then, $1,143 every 12 months instead of every 24 months.

Each Year It Grows Better

With a cash capital of $2,500 to carry you through the first season in the egg-farming business, and $500 additional for other expenses, you can have a thousand layers the first year. The building required is 225 feet long and costs $1,400. Three acres of yard for the fowls are needed.

What You Can Do With $2,500

As is clearly shown in the plan, the building is divided by a feed room into two 100-foot wings.

To equip this plant with 1,000 adult pullets you will need to start with 2,500 day-old chicks, which can be bought for $335. The twenty movable hovers, fountains, etc. will cost $178. Bringing 80 per cent. of the chicks to the age of 3 months, you will have 1,000 pullets and 1,000 cockerels at a cost for feeding, heating, etc. of $360. Interest and insurance amounts to $45 for the 3 months. Selling 950 cockerels for broilers will bring $285 and leave you 50 cockerels to mate with the 1,000 pullets. To maintain these 1,050 birds 14 months, which brings them through the laying season, will cost $1,470 for feed, with the addition of $210 for insurance on equipment and interest on investment.

At the end of the laying season the selling of the 1,050 birds for meat adds $630 to your receipts.

In the meantime, you will have gathered 144,000 eggs to sell for 3 cents each, or $4,320. The total of expenses is $3,998 and the total of receipts $5,235. The cash on hand amounts to $1,237, besides which you have the building and equipment worth $1,500.

APRIL, MAY, JUNE

Debit		*Credit*	
House and yarding	$1,400.00		
2,500 day-old chicks, at 13 cents	325.00		
Express	10.00		
Twenty hovers, at $8.00	160.00		
Twenty drinking fountains, at 40 cents	8.00		
Pump, shovel, buckets	10.00		
Feed, 2,000 chicks, 3 months, at 18 cents	360.00		
Interest and insurance	45.00		
	$2,318.00		

JULY THROUGH THE SECOND FOLLOWING AUGUST

Feed 1,050 birds, 14 months, at 10 cents	$1,470.00	950 cockerels, at 30 cents	$ 285.00
Interest and insurance at $15 a month, 14 months	210.00	1,050 birds marketed, at 60 cents	630.00
		144,000 eggs at 3 cents	4,320.00
	$3,998.00		$5,235.00

SUMMARY AT END OF SEASON

Total cash receipts	$5,235.00
Total cash expenses	3,998.00
Cash in hand	1,237.00
House and equipment (less 5% depreciation)	1,500.00
Total assets of business	$2,737.00
Profit	68%

The percentage of profit is figured from the total expenses of the season and the assets. If it were based on the largest actual amount of money invested any one month ($2,318), which is in reality the amount of capital invested, the percentage figure would be 118. The difference between $3,998 and $2,318 is allowed in order to give a wide margin of safety in the estimates and plans.

Make Your Capital Support You

As was said in the previous case, if you figure your time and labor to be worth $60 a month you will have a personal charge against the business of $1,020 for the season of 17 months. But, at any rate, you will have made your capital and labor pay you back $2,737 and will doubtless have secured much of your living from part of your labor at the same time.

The second season will require no new investment for building and equipment, so your expenses will be $1,500 less, and your receipts the same, with a cash profit of about $2,800. The equipment still remaining will make the business worth $4,300 the second and each following season, which is equivalent to a profit of over 150%.

Putting back into the plant part of your second season's earnings, in order to have room to start the following season's flocks, while the previous flocks are laying, will make your profit come every 12 months, instead of every 24 months, as is explained under "What you can do for $500."

Also, as has been shown, instead of killing off all the pullets before they molt, the best ones can be retained profitably for the next season, if you have additional room.

With a plant of this size there is, perhaps, more economy and convenience to be had from incubating for yourself instead of buying chicks, than with smaller plants. Five 400-egg incubators, set twice, would give you 2,500 chicks, at a total cost of $410, and pay for the machines.

As previously stated, the figures quoted in this chapter, under the various plans outlined, are very conservative,

both with respect to the amount of capital to be invested and the profits to be derived.

The chicken business today is a safer venture for sure returns than 90 per cent. of other lines of business in which to invest your money. Your profits are not affected by general business depression, for all poultry products have steadily advanced in the past eight years, independent of general business conditions.

Rancocas methods have succeeded on this and many other smaller plants, and are a guaranty of your success if strictly adhered to.

Three Feeds for Three Thousand Layers

Letter From Joel M. Foster

Founder of the Rancocas Poultry Farm and President of the International Poultry Sales Company

on the Particular Advantages of the I. C. S. Poultry Farming Courses

To Readers of the Million Egg Farm Book:

The particular value of the I. C. S. Poultry Farming Courses over all textbooks written on the subject is in the method employed to make the student center his mind and actually *learn*. It is this peculiar and wonderfully effective system that is responsible for the hundreds of letters sent to the I. C. S. every month telling of positions bettered and earnings increased through study of I. C. S. Courses. The student of an I. C. S. Poultry Farming Course will be able to apply the things he has learned—to make his knowledge show in results. This is the crowning merit of the I. C. S. system.

The I. C. S. System Makes the Student Concentrate and Remember

Probably you have found this book both entertaining and instructive. But the fact remains that neither the mere reading of this book, nor the mere reading of any book on any trade or occupation, will give to the reader that thorough understanding of the subject he must have to become expert in it.

This is because books are not, as a rule, read with the concentration of mind necessary to the thorough mastering of a technical subject.

The wonderful success of the I. C. S. in teaching technical subjects is because of the system to compel the student to so concentrate his attention as to understand what he reads and

make it a part of himself. The student of an I. C. S. Course gains not only a general knowledge of the subject he is studying; he gets a detailed knowledge of it that enables him to apply in every-day work its principles and practices.

The I. C. S. system, developed through nearly twenty years of successful teaching by correspondence, concentrates the attention of the student by presenting to him just one phase of the subject at a time and compelling him to write out answers to a series of questions arranged to cover thoroughly the matter he has studied. When a student has mastered a paper so as to be able to get a percentage of 90 from his instructors, he has necessarily so learned what he has studied as to be able to put it into actual practice. His mind has gripped the facts and will not lose them.

All I. C. S. Courses are easy to learn, easy to remember, and easy to apply. The I. C. S. system is a logical chain; to remember one link is to remember the entire chain.

Step by Step to Absolute Mastery

There are two I. C. S. Courses in Poultry farming, namely:

Poultry Farming Course.

Poultry for Exhibition Course.

The Poultry Farming Course teaches the student everything from the construction of a $4 poultry house to the successful development and handling of a poultry farm of 20,000 chickens. The knowledge gained in the establishment of the Rancocas Poultry Farm—the marvelous MILLION EGG FARM—has been woven into the Poultry Farming Course and is presented there according to the easy to learn, remember, and apply system of the I. C. S.

The Poultry for Exhibition Course, written by an expert with forty years experience back of him, gives to the student a full knowledge of how to produce and reproduce every kind and character of standard and exhibition fowl. The Course includes full instruction on: The Origin of Poultry; Improvement of Poultry; Selecting and Mating for Best Results;

Selecting and Preparing for Show Rooms; and How to Judge. Finely colored illustrations prepared from actual sketches from life of the finest specimens of the different breeds of fowl in the United States and Canada are used to illustrate the text.

It will cost you nothing but postage to get full particulars about the I. C. S. plan for making a practical and successful poultry farmer or breeder of you. Send a note or a postal card to the International Correspondence Schools, Box 1079, Scranton, Pa., asking for information. Doing this will place you under absolutely no obligation and will bring to you a detailed description of the I. C. S. Courses and the system followed to compel success.

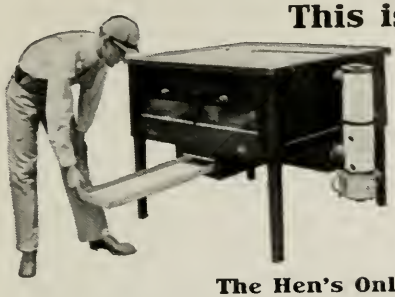
Joel M. Frost

President

D. H. HILL LIBRARY
North Carolina State College

An Impracticable Incubator Room Affected Seriously by the Sun

Of Over Two Hundred and Fifty



This is The One

The great business carried on at Rancocas Poultry Farm requires that we have the very best incubators to be had. We keep 250 incubators going. They have a hatching capacity of 100,800 eggs. We can't afford to waste eggs.

The Hen's Only Competitor

The 100 incubators that we used during the last year included the leading makes, the best we could buy. But they fell far short of the one here shown—the incubator we have built ourselves, the one that grew out of our experience, the hen's only competitor, the

International Self-Humidifying Incubator

We have tested and proven it by the best of other incubators. Its hatches are better than others because it gives effect to a vital principle in hatching. *It supplies moisture in a systematic way.* The fresh, live air on its way to the egg chamber passes over the sheet of warmed water shown in the picture. Water evaporates to supply the air with much or little moisture as required, and according to the climate. Cut off entirely if desired.

Bigger hatches of stronger chicks are the proof of superiority. Ours is the best test in the world, fair and square, continued eight months—the International against over 100 machines.

Let us send you proofs of the International superiority—the all-around winner. A better heating system—heater and moisture pan galvanized iron—moisture pan kept warm—no sprinkling—no heat or fumes direct from lamp can enter the egg chamber—life and moisture cannot be cooked out of air. We make it in four sizes, 100, 200, 300, 400-egg capacity, good measure, and it is the one incubator which meets absolutely all requirements of insurance companies. It is *built* of oak throughout, is fire-proof—not merely *adjusted* to meet underwriter's demands. And note this: You get the International at 10% less than standard incubator prices. Our 1911 catalog explains everything. Write for copy.

You Need the Co-operation of Rancocas Poultry Farm

We make a specialty of Fine Breeding Stock, of Fertile Hatching Eggs and of Baby Chix. We are supplying thousands of poultry-raising customers. Get in touch with us. We are glad to receive inquiries about anything.

Want Hatching Eggs?

Try the great Rancocas Leghorn strain. **90% Fertility Guaranteed.** No need to lose by having a lot of eggs prove infertile. We neither sell nor hatch from eggs laid by pullets—only from vigorous, mature hens. Send your order and get eggs that will give you higher class utility stock.

Breeding Stock

While our birds are really fancy they are actually bred for egg-getting. Hundreds of birds are constantly maturing and developing into fine breeders. We can supply you with the money-making kind at right prices. Tell us your needs.

Baby Chix

We will do your hatching for you, take all the chances, save you all egg loss and risk. We can supply you with lively, strong, newly-hatched chicks that are sure to grow and thrive. Prices low for fine chicks, excellent Leghorn stock. A few or as many as you want—write us.

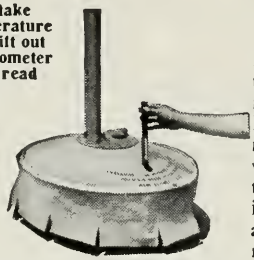
The Laying Instinct

Rancocas S. C. White Leghorns are the greatest laying strain in the world. It took many generations of breeding to develop it. It will be a great thing for your flock to get Rancocas laying instinct into it. Get it either through our Breeders Hatching Eggs or Baby Chix.

Rancocas Poultry Farm is the greatest egg producing concern in the world—two million eggs a year, about 500 dozen a day. Our doings ought to be of interest to you. Come and see us, or write to us.

International Poultry Sales Co., J. M. Foster, President, Box 400, Browns-Mills-In-the-Pines, N. J.

How We Mother Little Chicks at Rancocas Farm



To take temperature just lift out thermometer and read

Here is pictured the new sanitary hover which has proven such a success in our yards. It takes the place of the hen. Built entirely of strong metal, absolutely fire-proof, easily lasts 20 years. Impossible for lamp to blow out even in storm of rain, wind or snow. Gradual slope of drum downward over chicks' backs from upper, outer rim toward center. All heat and lamp fumes enclosed in drum above chicks. Heat by radiation from above. *No crowding, a great feature.* Chicks do not pile up in center but gather under outer edge, under and near hover cloth where heat is greatest. Vermin proof. Fresh, pure air, steady, mild heat, freedom from dirt, drafts and lice—all this is accomplished by using the

International Sanitary Hover

Read what these leading poultrymen say:

MEADOW VIEW STOCK FARM

Hyde, Md., September 15th, 1910

International Poultry Sales Co., Brown's Mills, N. J.
Gentlemen:—

I wish to acknowledge receipt of your favor of August 27th, asking as to the success I have had with the "International Sanitary Hover." I can unhesitatingly recommend your Hover as being the best on the market. I have used many others, but have discarded them for yours. My birds this year are stronger than any other year and my success I attribute to the use of your Hover. I find it not only more economical than others in the consumption of oil, but I find it more sanitary, as all parts can be cleaned readily and with ease. The Hover is made strong, and should last, with ordinary care, a lifetime. The operation of your Hover is simpler than any other I have ever operated and, as previously stated, it is the best on the market and I wish you continued success with same.

Yours very truly, Edward T. Boswell.

September 6th, 1910

J. M. Foster, Pres., Int. Poultry Sales Co., Brown's Mills, N. J.
Dear Sir:—

May 1st last, I purchased of your Company twenty-five International Sanitary Hovers under which were hovered two thousand five hundred chix. At the age of six weeks our loss was about five per cent, which loss I consider very light, when you take in view our inexperience in raising chix. The fact that your Hovers are not flammable I consider a very strong point in their favor. This is more strongly impressed upon me from the fact that one of a number of Hovers used by a neighbor, of different manufacture, caught fire from the lamp and had not this fire been discovered promptly the loss would have been serious. I take pleasure in saying that we have found your Hover satisfactory in every particular. Yours truly, W. G. Liddle. Mount Holly, N. J. R. F. D. No. 2.

Winners at Madison Square Garden, New York, Boston, Syracuse, N.Y., Auburn, N. Y., Jamestown, Va., Chicago, Ill., Philadelphia, Pa., and Memphis, Tenn.

PINE TOP POULTRY FARM

J. H. Hallock, Proprietor Hartwood, Sullivan Co., New York

Breeders and Exhibitors of Barred Plymouth Rocks, and Single Comb White Leghorns, Day Old Chicks, Eggs for Hatching, Exhibition and Utility Males and Females for sale at all times.

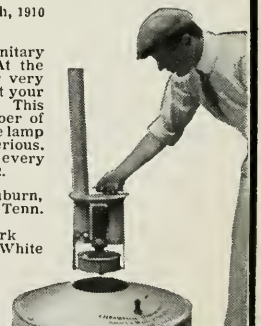
September 22, 1910

International Poultry Sales Co., 19 Barclay St., New York City.

Gentlemen:—I thought you might be interested in the successful way in which the brooder acted, that you forwarded to me to be tested.

I would say that we had a late hatch in August, of fifty-two chicks, and it is with pleasure that I state that at the present writing we have the same number living. As soon as we complete the building operations that we are undergoing, I will place an order with you for a number of these brooders. Very truly yours,

J. H. H. J. H. Hallock.



Easy to remove the lamp without disturbing chicks underneath. Just lift out—that's all.

You will be interested in knowing all about this wonderful hover—what it is, what it does and how it solves the problem of raising chicks. Visit us and see for yourself if you can. We make visitors welcome at Rancocas Farm. If you can't visit us, you can read about our doings. You get the story in full in our new catalogue. Write for a free copy.

INTERNATIONAL POULTRY SALES CO.,
J. M. Foster, President, Box 400, Brown's Mills-in-the-Pines, N. J.

TRADES UNION COUNCIL